

Implementation of the U.S.
China Nuclear Cooperation
Agreement

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IMPLEMENTATION OF THE U.S.-CHINA NUCLEAR
COOPERATION AGREEMENT:
WHOSE INTERESTS ARE SERVED?

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From
Under HEARING
BEFORE THE
COMMITTEE ON
INTERNATIONAL RELATIONS
HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTH CONGRESS

FIRST SESSION

OCTOBER 7, 1997

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IMPLEMENTATION OF THE U.S.-CHINA NUCLEAR COOPERATION AGREEMENT: WHOSE INTERESTS ARE SERVED?

TUESDAY, OCTOBER 7, 1997

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERNATIONAL RELATIONS,
Washington, DC.

The Committee met, pursuant to notice, at 10:04 a.m. in room 2172, Rayburn House Office Building, Hon. Benjamin A. Gilman (chairman of the Committee) presiding.

Chairman GILMAN. Our hearing will come to order. I want to welcome our witnesses who are here to testify on our U.S.-China nuclear commerce and prospects for implementation of the 1985 U.S.-China Nuclear Cooperation Agreement.

Our witnesses today are Paul Leventhal, President, Nuclear Control Institute. Welcome. Ambassador Robert Gallucci, Dean of the Georgetown University School of Foreign Service and former State Department official. Welcome, Dean. Ken Adelman, Executive Vice President of Commodore Applied Technologies and former Director of the Arms Control and Disarmament Agency and also wore many other hats in the past. We are pleased to have worked with Ambassador Adelman. And Ms. Jennifer Weeks, Executive Director of the Project on Managing the Atom at Harvard University, JFK School of Government; and last but not least, Marvin Fertel, Vice President, Nuclear Energy Institute. And we welcome this distinguished panel.

Before witnesses proceed, allow me just to make a few opening remarks.

We stand at a critical juncture with respect to U.S. nonproliferation policy toward China. Implementing a nuclear cooperation agreement is not a step to be taken lightly with any nation and with the Peoples Republic of China, it is vital that we do it in a proper manner. The Administration has argued that implementation of this agreement provides us leverage with the Chinese. Such an argument does have merit. I don't oppose nuclear commerce with China, and I recognize that there is a limited window of opportunity; however, I consider the window to be a little more open than does the Administration.

A decision of this magnitude should not be driven by the desire of an Administration to have a successful summit. There is time to do the right thing. There is time to persuade China to strengthen its nuclear nonproliferation efforts.

Administration officials have stated that no final decision has been made on whether the President will announce the implementation of this nuclear cooperation agreement at the upcoming summit.

Implementation of this agreement may be the centerpiece of the summit, yet barely 3 weeks before the event, Administration officials have said they are not sure whether they can meet the certifications required under the 1985 law. If that be so, it means that the Chinese have not said the right things as regards their policy on nonproliferation.

Given China's record in refusing to own up to its past proliferation record and its outright violation of specific assurances to us, it is deeply disturbing that so close to the summit, the Chinese are not even saying the right things to our Administration. On the other hand, if the Administration is refusing to lay out its objectives for this summit in order to avoid criticism, they are misleading the sentiment of the Congress.

This agreement involves U.S. national security. It deserves and will receive scrutiny, and while the jury may still be out on whether this agreement can be implemented, it is clear that the President may proceed as he wishes. It should be equally clear that there are legislative options available to the Congress.

Industry's views are certainly well known, and they have their allies in the Administration. However, at this point, I have yet to hear from a single nonproliferation expert outside the Administration who endorses implementation at this time. Perhaps that may change today.

Permit me to spell out our own criteria for assessing whether we should proceed with this accord. First, as I have stated previously, the Administration must keep the Congress apprised of its intentions with regard to the agreement. I have urged the Administration to regularly brief the Committee, to lay out the Administration's rationale for implementing this agreement before the summit and in open session. We have met in closed session, we are trying to work out a suitable date for such a hearing; the Administration has been working with us in good faith in that regard.

Second, in order to implement the agreement, the Administration must make the required certification of report; pursuant to the 1985 law, that certification must stand on its own. The Administration must adhere to the letter of the law. In part, the purpose of today's hearing is to lay out what is required in that certification and to hear the opinions of our witnesses as to whether the Administration can meet those tests.

And third, the Administration needs to convince the Congress that the time has come to change its status quo with regard to nuclear cooperation with China. And in that regard, it is not only China's nuclear nonproliferation record that is on trial. Clearly, we need to be assured that China's adhering to international nuclear nonproliferation norms, both in terms of explaining its past behavior and why its future behavior may be different. Members must be convinced that China has stopped assisting Pakistan's nuclear weapons procurement program and Iran's effort to develop an indigenous nuclear weapons capability. However, our Members also need to know that China is engaging in responsible nonprolifera-

tion behavior across the board, including all weapons of mass destruction and conventional weapons. That, to my mind, is what the political and substantive debate will be about here in the Congress.

In addition, in passing judgment on whether we should engage in nuclear cooperation with the Chinese, the Congress needs to know exactly what assurances and commitments the Chinese have provided as we move toward the summit. They badly want nuclear goods and technology and that is our leverage and we should make the most of it.

Let us not set the bar too low. At a minimum, we should require the following. First, China must join the Nuclear Suppliers Group. Second, China must cease proliferation of all weapons of mass destruction, including missile, chemical, and biological weapons. And, third, China must follow through with its promise to implement an export control system.

Are there any Members seeking recognition?

Mr. Bereuter.

Mr. BEREUTER. Thank you. I think the hearing obviously is very important. I look forward to the testimony of our witnesses.

Thank you, Mr. Chairman.

Chairman GILMAN. Mr. Graham.

Mr. GRAHAM. I would like to echo that sentiment.

I represent the Savannah River site, Mr. Chairman, which deals greatly with nuclear issues, and I agree with what the Chairman has said about what Congress needs to be informed of and persuaded about.

But I just want to put this hearing in context. China possesses nuclear reactors. They are buying them now from the Russians, from the Canadians, from the French, they are building one themselves; so this hearing has to be, I think, held in the light of reality, and I am very interested in what the Administration's views are after they meet with the Chinese. But my inclination is that we need to get engaged in as many positive ways as we can with the Chinese and that the conditions that we are asking China to comply with beyond the agreement make some sense, but there have to be limits on what we ask the Chinese in terms of making sure this happens and with that I am looking forward to hearing the testimony.

Chairman GILMAN. Thank you, Mr. Graham.

Mr. Salmon.

Mr. SALMON. Mr. Chairman, I just look forward to hearing the witnesses. Thank you.

Chairman GILMAN. Thank you.

I have before me a CRS report prepared by Shirley Kan, entitled "China's Compliance with International Arms Control Agreements." I think it is a good summary of China's nonproliferation record. I ask unanimous consent to include it as part of today's record. Without objection, so ordered.

[The information referred to appears in the appendix.]

Chairman GILMAN. Our first witness is Mr. Leventhal. Mr. Leventhal founded the Nuclear Control Institute in 1981, and serves as president after having held senior staff positions in the U.S. Senate on nuclear power and proliferation issues. The institute monitors civil and military nuclear programs worldwide and

pursues strategies for holding the spread and reversing the growth of nuclear armaments.

He has prepared several books and lectured in a number of countries on this issue, and he is the Distinguished Visiting Fellow at Cambridge University's Global Security program.

Mr. Leventhal served as Special Counsel to the Senate Government Operations Committee and was a staff director of the Senate Nuclear Regulatory Committee. He was a Research Fellow at Harvard, and he came to Washington as Press Secretary for Senator Javits a number of years ago.

Mr. Leventhal, you may read your full statement or summarize it—we will make the statement part of the record—whichever you may deem appropriate.

STATEMENT OF PAUL LEVENTHAL, PRESIDENT, NUCLEAR CONTROL INSTITUTE

Mr. LEVENTHAL. Thank you, Mr. Chairman. My statement is rather extensive, so I will summarize it in about 10 minutes' time.

Chairman GILMAN. Without objection, the full statement will be made a part of the record.

Mr. LEVENTHAL. There are a number of attachments which I would appreciate being inserted in the record.

Chairman GILMAN. Without objection.

Mr. LEVENTHAL. Mr. Chairman, I have been involved in a number of nuclear reform initiatives while working on Capitol Hill, particularly the "fissioning" of the Atomic Energy Commission in 1974 into separate and independent regulatory and promotional agencies. I did the preparatory work legislation that became the Nuclear Nonproliferation Act, and also handled the "lessons-learned" legislation following the Senate investigation of the Three Mile Island accident. And I regard the current situation in deciding whether the U.S.-China Nuclear Cooperation Agreement can be activated at this time to be a part of the whole reform process, and surely a test of whether U.S. nonproliferation law and policy is working in a very difficult situation.

As you know, Mr. Chairman, the U.S.-China nuclear agreement has been a work in progress since 1985, and Congress allowed the agreement to come into force technically, even though a number of its provisions vary from U.S. legal and policy requirements, but Congress established conditions for the activation of the agreement which no President, to this day, has been able to meet. And the reason for that, Mr. Chairman, is that neither President Reagan, Bush nor Clinton has been able to make the congressionally required certification of China's nonproliferation credentials. Since 1985, China has provided Algeria, Iran, Iraq and Pakistan with nuclear assistance applicable to the manufacture of nuclear weapons. And the question that we face today in 1997 is essentially the same as it was in 1985, as expressed by a State Department official to the New York Times. At that time, the question is whether a nonproliferation guarantee from the Chinese means the same thing to them as it does to us.

The Reagan Administration, after a number of false starts at getting a clear guarantee from the Chinese leadership finally thought they had one from then Vice Premier Li Peng, who said, and I

quote, "China has no intention either at the present or in the future to help non-nuclear countries develop nuclear weapons." And on the basis of that and other assurances, the negotiator of the agreement at that time, Ambassador at Large Richard Kennedy, reported in testimony to this Committee, and I quote, "Our contacts with the Chinese have demonstrated clearly that they appreciate the importance we attach to nonproliferation. We are satisfied that the policies they have adopted are consistent with our own basic views. Formalizing our ties in the peaceful uses of nuclear energy through an agreement for cooperation will provide a means to advance our shared objectives."

But China, in fact, did not stop its proliferating ways when it signed the agreement in 1985 and indeed, China had contracted to provide an unsafeguarded plutonium production reactor to Algeria and had begun construction of the then-secret facility at the very time China was negotiating its signing of this very agreement that you are now reconsidering today.

The Clinton Administration appears to be preparing a defense similar to the one the Reagan Administration prepared, and on the basis of commitments that presumably will allow the President to certify, as required by law—and the law in this case is a combination of the conditions in the resolution of approval of 1985 and a further elaboration of those conditions in the Tiananmen Square legislation of 1990; and the key finding is, and I quote, "China has provided clear and unequivocal assurances to the United States that it is not assisting and will not assist any non-nuclear weapons State, either directly or indirectly, in acquiring nuclear explosive devices or the materials and components for such devices."

As we know and as you mentioned, Mr. Chairman, the Administration is in intense negotiations with China right now in the hope that the activation of the agreement can become the centerpiece of the upcoming summit between Presidents Clinton and Jiang, and it is clear that industry is lobbying the Administration very hard to activate the agreement so as not to lose out on what they anticipate to be many billions of dollars in reactor sales that might otherwise be lost to the French, the Canadians or other competitors.

Now, a key problem is that if U.S. trade is to proceed with China, it will do so in the context of a weak and deeply flawed agreement, one that was negotiated a decade ago under difficult circumstances. Specifically, the agreement does not provide the safeguard requirements on U.S. nuclear transfers found in all other U.S. nuclear cooperation agreements, including those with nuclear weapons States, and it does not assert the U.S. prerogatives to withhold consent for the separation and use of plutonium from U.S.-supplied fuel. So the agreement fails to come to grips with the need for effective internal controls over transferred U.S. nuclear reactors and fuel inside China, and it also does not address at all the need for external controls over Chinese nuclear transfers to other nations, other than retransfer of items that the United States would supply to China.

Now, fortunately, the Congress established a means to resolve a core concern about China's nuclear export policy, and that concern goes to the fact that China refuses to require recipients of its nuclear transfers to open their entire nuclear program to inter-

national inspections and audits, so-called "full-scope safeguards", so in our view, the President should not certify China's nonproliferation credentials and thereby authorize trade with China until China agrees to require full-scope safeguards. And I was pleased, Mr. Chairman, you mentioned that as one of the items you are going to be watching closely in your discussions with the Administration.

Now, the significance of full-scope safeguards, the importance of it, is made clear in the present situation with Pakistan. And in the situation of Pakistan, China supplies Pakistan material for a safeguarded facility, one that Pakistan has agreed to allow the IAEA to audit, namely the Kanupp power reactor, which was originally exported by Canada. But there exist unsafeguarded facilities in Pakistan, indeed, one that was constructed primarily by China for Pakistan, and that is a nearly complete plutonium production reactor at Khushab.

Now, apparently the United States has obtained a commitment from China not to supply the heavy water necessary to start up this unsafeguarded plutonium production reactor, but our own research indicates that China may knowingly today be supplying more heavy water to the safeguarded reactor than is needed to make up processing losses and thereby creating a surplus of that material which is vulnerable to a diversion by Pakistan to the unsafeguarded facility. Experts we consulted have grave doubts that the International Atomic Energy Agency inspectors would be able to detect that kind of a diversion. It is our understanding the plant needs 5 to 15 tons of heavy water to start up. I am talking about the unsafeguarded reactor, and China today may be providing Pakistan with about 4 tons a year more heavy water than it needs to run the power reactor. So this is one issue that ought to be looked at closely, and it illustrates the importance of the United States insisting China subscribe to full-scope safeguards in terms of its own export policies.

The other matter of immediate concern is Iran, and again, Mr. Chairman, you covered that quite well. It may be that the Administration is able to obtain concessions from China not to supply two power reactors as planned, not to proceed with a uranium conversion plant export that would permit Pakistan to convert uranium gas into a metal form, an essential step for making weapons.

But the issue remains, what ongoing assistance will continue, and there the Administration may not be as forthcoming, but I think it is important that it be stated for the public record what ongoing assistance there is between China and Iran; and our view is that all such assistance should cease before the President is able to certify that China has met the requirements of law.

I would like to make special note of the significance of the potential plutonium program in China. When the agreement for cooperation was negotiated, the Reagan Administration explained the lack of a firm commitment to the application of safeguards by China on U.S.-supplied material, and also that it was not asserting the consent rights that the United States, under its own law, has the right to assert over whether or not China would reprocess U.S.-supplied fuel and extract plutonium. One of the arguments in defense of this position is that China is a nuclear weapons State, the low-enriched

uranium we are supplying is not a direct-use weapons material, and therefore, the fact that the traditional safeguards arrangements are not in place is not a matter of concern.

Even if one subscribes to that explanation, the same rationale cannot apply to plutonium that China would separate from U.S.-supplied fuel because that is a direct-use material and is susceptible to diversion to a weapons program and could be a source of plutonium to the Chinese weapons program. So we would argue that the safeguards and consent rights arrangements are still weak and that it is necessary for Congress to press the Administration on getting some concessions from China, both with regard to safeguards and plutonium.

Now, it may seem old fashioned in contemporary nonproliferation policy to be concerned about the closing of the fuel cycle and the bringing into being, many, many tons of weapons-usable plutonium, but we would argue, this is a matter of continuing concern; and what plagues the entire nonproliferation program of the United States is the acquiescence of this Administration, and previous administrations since the Carter Administration, to the sheer folly of promoting peaceful applications of atomic energy with atom bomb material as fuel.

I would simply add, before I close on this point, that China itself might have an interest in not going down the plutonium path because it is extremely expensive and hard to manage, and therefore, may not make commercial sense; but beyond that, China is concerned about the military potential of both the Japanese and the Indian programs where tons of plutonium are being stockpiled. So China may find it in its own interest not to engage in reprocessing, and also, to perhaps join in an effort to seek a cutoff of fissile material that includes civilian as well as military; and therefore, the Administration should be pursuing that.

I would just like to go now to my conclusion and indicate our recommendations for what the Congress should be doing at this point in time.

If President Clinton decides at this time that he can certify China pursuant to the law, we would still argue that even with the export control system that China has now apparently put in place, and with the commitments that it has apparently made with regard to Iran, one still has to be very nervous about whether we know everything that China is actually doing and will be doing; and I would cite, again, Ambassador Kennedy's testimony that came immediately before the U.S. learning of an unsafeguarded reactor being sent to Algeria. Therefore, we would recommend that a decent interval be legislated by Congress, specifically, that no commerce would go forward under the agreement after certification by the President for a period of at least 1 year, and then at any point after that, when there is an application to the NRC for an export license or to DOE for approval for transfers and retransfers to China, that the President should be required to recertify his original certifications that activated the agreement, and that that recertification should lie before Congress for 30 days before any export license could be approved, or any approval by the Department of Energy. That would permit Congress to maintain effective oversight, and it would have the additional beneficial effect of putting

China on notice that its activities will be followed very closely by both the Congress and the executive branch, and that recertification of its nonproliferation credentials will be required before any major transfer goes forward under the agreement.

That is a summary of my testimony. I would just like to note that both we and a group of nine public interest organizations have written to the President. I have submitted that letter for the record, the letter lays out a number of the concerns that I just spelled out here.

Thank you, Mr. Chairman.

Chairman GILMAN. Thank you, Mr. Leventhal, and that will be made part of the record.

[The prepared statement and the abovementioned letter of Mr. Leventhal appear in the appendix.]

Chairman GILMAN. Our next witness is Robert Gallucci, Dean of the School of Foreign Service at Georgetown University. Robert Gallucci began as Dean back in 1996. He just completed 21 years of government service, serving since August 1994 with the Department of State as Ambassador at large; and from 1992 to 1994 he was Assistant Secretary of State for Political-Military Affairs. Dr. Gallucci returned to Washington in February 1992 to be the Senior Coordinator responsible for nonproliferation and nuclear safety initiatives in the former Soviet Union, and prior to his return, since creation in April 1991, as Deputy Executive Chairman of the U.N. Special Commission overseeing the disarmament of Iraq.

Dr. Gallucci began his foreign affairs career with the Arms Control and Disarmament Agency in 1974, and he has authored a number of publications on political-military issues, including *Neither Peace nor Honor: The Politics of American Military Policy in Vietnam*; and he has received the Department of the Army's Outstanding Civilian Service Award.

Dean Gallucci, you may proceed to read your full statement or summarize it, and we would hope that you would be brief, since we have three other witnesses, and I know my colleagues would like to engage in an exchange.

Dean Gallucci.

**STATEMENT OF AMBASSADOR ROBERT GALLUCCI, DEAN,
SCHOOL OF FOREIGN SERVICE, GEORGETOWN UNIVERSITY**

Mr. GALLUCCI. Thank you, Mr. Chairman. Thank you for the opportunity to be here today. With your permission, I would like to submit a written statement for the record.

Chairman GILMAN. Without objection, the full statement will be made a part of the record.

Mr. GALLUCCI. Mr. Chairman, it seems to me that one way of putting the issue today is to ask ourselves whether it is in the national interest for the President of the United States to seek to implement the 1985 Agreement for Cooperation with China by providing the certifications specified in the legislation. That question, it seems to me, provokes four other questions based upon the debate that I have read and heard, some of it in Mr. Leventhal's testimony.

The first question is simply, does the evidence support a case that the standard of the legislation has been met? This is the first

question. The second is, even if the evidence does support that standard, wouldn't it be wise or prudent or a good idea that we go beyond that standard at this point of maximum leverage to get more in the nuclear area from the Chinese? Third, wholly apart from the nuclear area, should we not insist that the Chinese behavior in other areas of weapons of mass destruction—chemical weapons and ballistic missiles particularly—that that behavior be taken into account as we consider the case for certification? And finally, no matter what one says about those first three questions, why rush to judgment, why act so quickly now, why not wait and let the record build up?

I think those are how I would divide up the four questions. Let me very briefly address or try to address each one.

As Paul Leventhal said, the standard is actually pretty high. Essentially, the President has to certify that China is not assisting any non-nuclear weapons State in acquiring nuclear weapons, and he has to find that there are clear and unequivocal assurances of neither direct nor indirect assistance.

Now, there is a long unhappy history of Chinese cooperation, at least purported cooperation, with Pakistan's unsafeguarded nuclear program and even reportedly direct assistance to Pakistan in the fabrication of nuclear weapons. In addition, there is evidence, and on the record, of Chinese assistance to Iran or at least agreements to assist Iran in the nuclear area.

Separating us from this unhappy history are the assurances of about a year and a half ago, May 1996, from the Chinese, that they would essentially do two things: that they would not export to unsafeguarded facilities and that they would put an effective export control system into effect.

Now, it seems to me that the standard here would have us hold the Chinese to absolutely no assistance to Pakistan's unsafeguarded nuclear activities and no significant nuclear cooperation of any kind, safeguarded or not, with Iran. Whether or not the Chinese meet that standard, I do not know, but those of you with access to intelligence can make that judgment.

With respect to the question of the export control system, there is, it seems to me, a little ambiguity here because there is the issue of whether the Chinese are going to be held to the Zangger standard or to the Nuclear Suppliers Group standard, and if to the latter, then they must have, in effect, as I understand it, a control on so-called "dual-use items". I think we should resolve that issue in our favor and require that the Chinese have in place control of dual-use items if they are to have in place an effective export control system. That is to the first point.

To the second question, after a judgment is made based on the intelligence of whether they have met that standard, specifically, should we not at this point of maximum leverage insist that the Chinese accept the standard of full-scope safeguards as a condition of supply of nuclear equipment and material to other countries, that the Chinese forego the reprocessing of spent fuel and, therefore, the separation of plutonium in their commercial activities.

And, third, should we not press the Chinese to accept IAEA safeguards voluntarily on anything we export to them?

It seems to me that all three of these standards, or all three of these objectives are very desirable, they are nice to have and I think we ought to seek them; but it does not seem to me that the record supports the conclusion that either they are part of the legislative requirement, the standards set by the Congress, nor are they, to the best of my knowledge, provisions that we have sought in past negotiations over the last couple of years with the Chinese. Thus, I would conclude that if we were to do this now, we would simply be trying to take advantage of a certain leverage, which we may or may not have. We would be raising the bar or moving the goal post, and I don't think that is the way the United States of America should behave in a negotiation; I think it undermines us, and I would not think it a good idea.

The last point I will make about this—provisions, I think, which are in fact attainable over time. I think that the Chinese can be drawn into the Nuclear Suppliers Group, I think they can be drawn further into the international nonproliferation regime; and I think we can achieve all three, but I don't believe they ought to be a condition of implementation.

On the third question, outside of the nuclear area, with respect to other weapons of mass destruction, what about Chinese behavior in the area of exports of chemical weapons or chemical weapons precursors, or ballistic missiles or ballistic missile components? It seems to me, that here we have a long and unhappy history of bad behavior by the Chinese and, more recently, some good behavior with adherence to the Chemical Weapons Convention and Missile Technology Control Regime.

I think I would net this out by saying that we ought to have a clear red line drawn with the Chinese, and it ought to be made clear to the Chinese that significant transfers in these areas—chemical weapons, ballistic missiles—behavior, in other words, inconsistent with the regimes, international regimes in the chemical and in the ballistic missile area, would be a basis for denying licenses to the Chinese once an agreement for cooperation was in place.

What I am saying, in other words, Mr. Chairman, is, I would not hold up certification in this area unless there were now outstanding issues of transfers by the Chinese in the chemical, ballistic missile or even the biological area—again, a question that one can answer with access to the intelligence, and I cannot.

If there are no outstanding cases, I would not set this past behavior as an obstacle to certification, but I would certainly use certification in an agreement once implemented as leverage to insist on Chinese good behavior and hold licenses hostage.

The final question of, why rush to judgment: Why—after such a long history of misbehavior, if I can put it that way, and such a relatively short record of compliance, why make the judgment now that implementation should proceed? It seems to me that this really goes to the heart of the political matter, and you all must answer the question of whether you think it is in the national security interest of the United States, whether it advances our nonproliferation objectives, whether it advances our regional security objectives to be in a position to export nuclear power reactors to China.

I think you should answer that question more broadly in terms of the national interest. Is it in our national interest? Is it perhaps even useful in terms of our concern about the environment and greenhouse gases to be exporting to China? And I don't think in these terms it is irrelevant to think about the export impact for the United States of being able to sell these reactors.

If you believe it is in the national interest to be in a position to do so, then I would suggest that we proceed by recognizing that the track record is short and, at this moment, I would say, incomplete, particularly with respect to dual-use export controls. But when it is complete, if the standard has been met, I would not see a reason for waiting; if we implemented the agreement, if the President certified and if the Congress concurred, U.S. companies would be joining Russian, French and Canadian companies that are selling reactors to China. U.S.-Chinese relations, I believe, would improve, and I also would see China as more likely to be drawn further into the web of legitimate relations between sovereign States.

Always, we would have the opportunity to refuse to license exports to China under the agreement if their behavior was inconsistent with the standards that have been set.

Thank you, Mr. Chairman.

Chairman GILMAN. Thank you, Dean Gallucci.

[The prepared statement of Mr. Gallucci appears in the appendix.]

Chairman GILMAN. Our next witness is Kenneth Adelman, Executive Vice President, Commodore Applied Technologies. This position brings Ambassador Adelman full circle since, as President Reagan's arms control director back in the 1980's, he helped draft and introduce a chemical weapons treaty which finally took effect in 1997.

From 1981 to 1983, Mr. Adelman served as ambassador to the United Nations. With the rank of Ambassador Extraordinaire and Plenipotentiary, he was second in command to Jeane Kirkpatrick and acted as my boss in the United Nations for a short period.

Mr. Adelman, besides hundreds of articles, has published four major books and he is now doing some teaching along the way.

We welcome you, Ambassador Adelman, and again you may read the whole statement or put a summary in the record as you see fit; and we hope you will be as brief as possible.

STATEMENT OF KENNETH ADELMAN, FORMER DIRECTOR, ARMS CONTROL AND DISARMAMENT AGENCY

Mr. ADELMAN. Thank you very much, Mr. Chairman. Let me say it is a pleasure to see you and be back at this Committee. I have many memories of this Committee, testifying a dozen years ago, some of which were pleasurable. But it is wonderful to see you, Mr. Chairman; and I don't know how many witnesses you have that you call your "boss" in previous times. I never thought of myself as your boss, but I am flattered by the title.

Let me say that you did a wonderful job as public delegate up at the United Nations when we were up there battling the United Nations, battling the Third World, battling the Russians. It was a totally different international era then. It is a real pleasure to be back here.

I want to congratulate the Committee on addressing this issue, which I think deals with two out of the three most important issues facing U.S. foreign policy today. First, relations with China and how to get China to adopt the international norms and standards that are prevailing today. I don't say "American norms and standards"; I say the "international norms and standards". And this cuts across the board in terms of human rights, in terms of intellectual property, in terms of nonproliferation of chemical weapons, nuclear weapons, of missiles. It has to do with not threatening its neighbors, neighboring entities like Taiwan. It is a whole range of issues on which Chinese behavior has been disappointing at best and deplorable at worst.

The second out of the three major U.S. foreign policy initiatives or priorities—is, of course, how to deal with the whole question of nonproliferation, how to protect our country against the spread of weapons of mass destruction around the world. This hearing combines two out of those three, and it is quite critical in that regard.

I come to you as somebody who testified a dozen years ago on behalf of the U.S.-China agreement. I thought at that time it was a very good deal for the United States. I come to you now as somebody who has been disappointed by the results thereof. I do not do that in order to hurt American business abroad; in fact, now I am a newly founded businessman and, therefore, have real business interests and applaud the efforts—especially of the Clinton Administration—to be quite wonderful in promoting U.S. business abroad.

But I do believe there are higher interests, or at least other interests, of U.S. foreign policies than to push American products and business interests abroad; otherwise, the Secretary of State of the United States of America is going to become nothing more than a foreign minister of many European countries, that is, basically a traveling salesman for that countries' products.

Let me make three points. I am sorry I don't have either an extensive testimony to submit to the record or even a summary of the testimony, but I do have three points to bring up. One concerns summits, one concerns the comprehensive strategy of the approach to China, and the third goes to the issue of the nonproliferation and the nuclear issue.

First, on summits. One of the things I have learned over the years in dealing in international affairs is summits can be very dangerous times. Someone once said a summit is like Cleopatra, a lot of fun to be involved with but quite treacherous when you get into the maneuvers. I have found over the years, especially dealing with the Soviet Union, some of the worst ideas in U.S. foreign policy bubble up and become full bloom in preparation for summits.

I noticed in articles on the upcoming October 28 summit with the Chinese that the Chinese expect "concrete results" from the summit. It is a nice statement. Does that mean the "concrete results" have to come from us? Why don't the "concrete results" come from the Chinese?

This idea that in order to make a summit successful, we have to give a gift to the visiting leader in the summit, has proven dangerous over the years. I would think that a visiting Head of State has gift enough in having a State dinner. If not, then give him a

little Steuben eagle of the United States or some other gift—maybe Presidential cuff links.

I am not about to pay in policy for a gift in order to, “have a successful summit”. And so I would warn against the Chinese expecting that this summit has to have a gift, our gift to them, and for concrete results.

Second, I have always been struck by the fact that we need to have a strategy in dealing with China, and not a piecemeal approach. The problems of China involve comprehensive problems: They deal with human rights. They deal with Taiwan. They deal with missile proliferation. They deal with nuclear proliferation. They deal with intellectual property.

All of these have certain things in common—the rule of law and abiding by the prevailing international norms and standards that now, thank God, are found around the world. To have bits of this China policy is really to atomize, to divide, what should be a strategic approach. And lest this be considered unfair for the United States to try, a comprehensive approach, that’s been the Chinese approach for a very long time.

I remember, as I am sure Brother Gallucci here does, dealing with the Chinese in the 1970’s and 1980’s. Every time they talked about relations with the Soviet Union, they said, in order to normalize relations, the Soviet Union had to do three things: get the Vietnamese troops out of Cambodia, reduce their 40 divisions along the Chinese border, and get Soviet troops out of Afghanistan; Chinese leaders kept saying it and saying it and saying it for most of a decade.

If a then-very backwards and poor China could make demands for real results against the mighty Soviet Union in order to, “normalize relations”—which really didn’t have that much to benefit the Soviet Union—then what could the United States of America, the prevailing power in the world in every sense today, do if we had a comprehensive approach with China?

So I would urge that this Committee look at China in a larger context. I would really think that the considerations of the 1985 nuclear agreement and the acts of Congress, if I may say, tend to parse out the policy related and prevent the Congress from really taking a more comprehensive view.

The third point, after talking about summits and strategy, concerns Chinese compliance with international standards and norms. The best that can be said is that it is a rocky record, if I can be so kind. Mostly it is a pretty deplorable record.

I read in the documents supplied to the Committee that the Director of the CIA said 3 months ago that China was, “the primary source of nuclear-related equipment and technology to Pakistan, and a key supplier to Iran during the last half of 1996.” Now this is not a very long time ago. These are quite serious charges, or quite serious findings——

Mr. BERMAN. Could you just repeat that?

Mr. ADELMAN. The CIA Director said 3 months ago, that China was, “the primary source of nuclear-related equipment and technology to Pakistan and the key supplier to Iran during the second half of 1996.”

Mr. BERMAN. Key supplier of what to Iran?

Mr. ADELMAN. Key supplier—I don't know; that is the quote. I would imagine the nuclear supplier to Iran in 1996, the second half.

So that is relatively recent. It is quite a firm statement from the Director of the CIA. Anybody who tries to do the dance about how China has been behaving of late, in the last few years, would have to do a very nimble dance in order to persuade anybody that their record is very good.

Let me, in closing, say that I came to this Committee to testify a dozen years ago—right after I was the Chairman's "boss". I came a dozen years ago to say that we should move ahead with the China agreement.

I based that, as Dr. Samuel Johnson said about second marriages, more on hope than experience.

After all these years, my hope has dwindled. The experience has saddened me. After a while, we have to admit that it hasn't worked out as we had hoped. The record of the Chinese has not been glorious enough to deserve nuclear normalization in this regard.

Thank you, Mr. Chairman.

Chairman GILMAN. Thank you, Ambassador Adelman, and we will make your statement a part of the record without objection.

Ms. Jennifer Weeks is our next witness, Executive Director of the project of Managing the Atom at the Belfer Center for Science and International Affairs at the John F. Kennedy School of Government. Prior to joining Harvard in 1997, Ms. Weeks directed the Union of Concerned Scientists' Arms Control and International Security program and served as UCS's principal arms control lobbyist on issues including arms proliferation, deep nuclear reductions, and multilateral peacekeeping.

She has written a number of articles, appeared in publications in many of our major media, and serves on the executive board of Women in International Security and as a member of the Council on Foreign Relations.

Ms. Weeks, you may put your full statement in the record and summarize or read the full statement. We hope you would be brief, so we can enter into a dialog. Please proceed, Ms. Weeks.

**STATEMENT OF JENNIFER WEEKS, EXECUTIVE DIRECTOR,
PROJECT ON MANAGING THE ATOM, JOHN F. KENNEDY
SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY**

Ms. WEEKS. Thank you, Mr. Chairman. I also have worked on Capitol Hill for several years and I know that less is more when people are testifying, so I would like to enter my full statement into the record, along with an article on the Nuclear Cooperation Agreement which I recently published in the journal, "Arms Control Today".

Chairman GILMAN. Without objection.

Ms. WEEKS. Thank you.

You have a range of views on certification represented on this panel, and mine is essentially, "Yes, if"—with a big underline under the "if". Implementing nuclear trade with China makes sense if the Administration uses it effectively to improve China's nuclear nonproliferation policy.

I recommend that the Committee focus on five issues as it looks at the case for certification. The key certification issue is whether China is assisting any non-nuclear States to acquire nuclear explosives or explosive materials, and here I agree with Paul Leventhal and with Ambassador Gallucci that if China cannot completely sever its cooperation with Iran and with Pakistan's unsafeguarded facilities, the United States should not certify. I just don't think there is any room for grayness on this issue.

The second issue is that we need tangible evidence that the new Chinese export control system is complete and is effective enough to work. The new Chinese export control regulations that were announced last month focus on specialized nuclear technologies; they do not extend to dual-use goods, meaning goods that have both commercial and weapons applications. The Chinese Government issued a directive on dual-use export controls earlier this year, but it is still developing the regulations to control them.

I think we learned from Iraq's nuclear weapons program during the Gulf War, which profited from a lot of dual-use technology imports, that you have to have effective controls on dual-use technologies with nuclear weapons applications. Until the Administration can show that China has both the intent and the capability to control all relevant nuclear technologies, I don't think we should certify them.

Third, Congress should really push the Administration on the issue of where China is going on full-scope safeguards. There has been some discussion of this issue already. China is the only major nuclear supplier country that does not require full-scope safeguards as a condition for exports now. This is not required for certification. The United States has tried to get them to do this, and they have resisted taking the step so far. But I would point out that China has announced that it plans to join the Zangger Committee which regulates exports of nuclear fuel and equipment.

The Zangger Committee is expected to adopt a full-scope safeguard policy within 3 years, by the NPT prepcom meeting in the year 2000. This has put China on a track to deal with this issue. I don't think the Chinese are stupid; I think they are aware of this. They are hopefully moving in this direction.

Conceivably, they could block the Zangger Committee from adopting full-scope safeguards because the Committee makes decisions by consensus. But I think it is also possible that once they join the Zangger Committee, they will come under pressure from other countries within the group to adopt the same standards that other countries within the group already uphold. Some countries, including Australia, have already started pushing China on this issue. So I think this is something where we should understand what the Administration strategy is, but I would not necessarily link it to certification now; I am not sure that is the best strategy, and I will come back to this in a minute.

Fourth, Congress should ask the Administration how it plans to verify that China is using U.S. nuclear exports only for peaceful purposes. As my article in "Arms Control Today" discusses, the agreement for cooperation has very vague language on safeguards; it talks about mutually acceptable visits and inspections, but it doesn't really spell out what we are going to do, so I think the

Committee should seek a very clear picture from the United States of what we are going to do in terms of inspections, end-use checks, documentation, and how we are going to be sure that they are using U.S. exports for what they are supposed to be used for.

Finally, I urge the Committee to look very critically at what kind of trade benefits we will get from nuclear sales to China. I am not inherently against selling nuclear reactors to China. They have enormous energy needs, and are an important market. It would be nice to reduce their greenhouse gas emissions, but even if China increases its current nuclear power tenfold in the next 10 or 15 years, as they expect to, nuclear power will supply a total of about 4 percent of their total energy needs, according to estimates from the Energy Information Administration.

Three-quarters of China's energy needs will still be met by coal by 2015, so I would not exaggerate the benefits from nuclear exports to China. And I don't think the Committee should overlook the fact that we can sell a lot of other energy technology to China, too; we can sell them clean coal technology, natural gas pipelines, and energy efficiency equipment.

So there is a much bigger picture here than just nuclear sales. The jobs and the export revenue are significant, and I don't dismiss those, but I don't think they should drive this decision. Congress should look at the timing of this decision critically and should ask whether, if there were not a summit coming up in 2 or 3 weeks, we would be certifying China now. If the answer is no, then which is more important, a successful summit or real progress from China on nuclear nonproliferation?

I would say that progress on nonproliferation is the right answer. I do also think, though, that there are limits to what the United States can win from China in the context of this decision. Here I agree with Dr. Gallucci that going beyond the legal requirements for certification now—attempting to raise the bar, move the goal post, or whatever sports metaphor you want to use—could make the perfect the enemy of the good.

I think it will be hard enough for the Administration to get really clear guarantees that China will cease its cooperation with Pakistan and Iran and will beef up its export controls. If we get that, I don't think that we should risk losing that bird in the hand by demanding more things now that we could get in the near future. The United States could lose some very valuable opportunities to work with China on other arms control issues if we move the goal post now.

One important issue is that they are going to need our help to build an effective export control system. The Energy Department and the national labs are very interested in working with China on other issues, including improving their security over fissile materials and reducing the use of highly enriched uranium in civilian reactors, which China exports. Chinese officials are interested in working on these issues, but a number of DOE and lab people have told me that the first priority of the Chinese is to implement the nuclear trade agreement, and they use all of those other issues as levers to try to push the United States to take that step.

Now, this does not mean that we should cut corners on certifying them, but it does suggest that implementing the nuclear trade

agreement under the right conditions will open the door to further bilateral cooperation that is very much in our national security interest. I think it will help get our people into China, and build our contacts within the Chinese nuclear complex, and in the long run that will be good for us. We can help build a nonproliferation culture in China and shore up the factions within the Chinese Government that want to improve their nonproliferation policy.

In conclusion, I recommend that the Committee should work very closely with the Administration over the next several weeks to reach agreement on the areas that are essential and legally required for certification, and I would put the cooperation with Pakistan and Iran and the export control systems at the top of that list. If the Administration cannot provide convincing documentation on these issues, Congress should not support implementing the nuclear trade agreement at this time. If the Administration does meet these criteria, I don't think Congress should try to widen the scope of the decision.

I do think there is plenty of room for Congress to look at legislation. I am sure that Congress will pass some kind of measure providing its judgment on certification at some point, possibly setting some conditions for the next phase of U.S.-Chinese nuclear negotiations.

One idea I raise in my written statement is that Congress might set some kind of deadline of 3 years for China to adopt full-scope safeguards as a condition for exports, since it is part of the Zangger Committee and since the Zangger Committee is on that track. Congress could even impose a requirement that if China does not move along with the rest of the Zangger Committee to adopt full-scope safeguards, we would look at suspending nuclear cooperation. This would set a new goal, and a new timetable, and would give China an incentive to keep making progress.

I do think, if the Committee really believes the case hasn't been made for certification and the summit is creating an artificial deadline, that it would be legitimate for the Congress to extend the congressional review period from the 30 days of legislative session that are required under current law to a longer period. I agree with you, Mr. Chairman, that this is worth doing right.

And, finally, it is important to keep the big picture in mind and recall that China has made a lot of progress on nonproliferation. Some of our closest allies, including France and Germany, were considerably further back on the same track a few years ago, and it took us a long time to persuade them to do things like requiring full-scope safeguards for exports and controlling their dual-use exports more tightly. We were persistent in those cases, we worked with them, and it paid off. We should be willing to make the same investment in working with China.

Thank you.

Chairman GILMAN. Thank you, Ms. Weeks, for your statement, and we will be pleased to make your full statement part of the record.

[The prepared statement of Ms. Weeks appears in the appendix.]

Chairman GILMAN. We now have as our witness, Marvin Fertel, Vice President, Nuclear Infrastructure Support and International Programs at the Nuclear Energy Institute, the industry organiza-

tion responsible for establishing unified nuclear industry policy. He has had almost 30 years of experience consulting to electric utilities on issues related to designing, siting, licensing and management of fissile nuclear plants.

Mr. Fertel has worked in executive positions with organizations such as Ebasco Management Analysis Company, Delian and Tenera. Mr. Fertel has been very active in the issues of nuclear technology.

Mr. Fertel, you may put your full statement in the record and summarize or read the full statement, but we hope you would be brief so our Members can have a dialog. Please proceed, Mr. Fertel.

STATEMENT OF MARVIN FERTEL, VICE PRESIDENT, NUCLEAR INFRASTRUCTURE SUPPORT AND INTERNATIONAL PROGRAMS, NUCLEAR ENERGY INSTITUTE

Mr. FERTEL. Thank you, Mr. Chairman. I would like to enter the full statement into the record and I will make a summary statement here, and then hopefully we can indulge in some dialog.

Chairman GILMAN. Without objection, the full statement will be entered in the record.

Mr. FERTEL. I would like to first express my gratitude to you, to the Ranking Member, Mr. Hamilton, and to the other Members of this Committee for considering the importance of commercial nuclear cooperation between the United States and China. We certainly appreciate the opportunity to provide the nuclear industry's perspective on issues related to that nuclear cooperation today.

I find myself in agreement with an awful lot of what my colleagues at the witness table have said today. I think, foremost, when considering a global market for nuclear technology, it is in every country's best interest that the United States implement a strong nuclear nonproliferation relationship with China. An important first step in forging that relationship is negotiating and implementing an agreement for peaceful nuclear cooperation. This agreement provides the framework within which both trade and nonproliferation initiatives can evolve and succeed.

It is important to recognize that following the establishment of agreement for cooperation, the United States has extensive export control requirements, and of course, we will continue to pursue both overt and, I am sure, covert intelligence on China's nuclear nonproliferation activities. We believe these systems provide additional substantive safeguards against any misapplication of U.S. technology or other actions by China.

If the President can certify that China has met congressional conditions for implementing the peaceful Nuclear Cooperation Agreement, we strongly believe it would be in the best interest of the United States and the world for us to begin to participate in that program.

Improvements, though certainly not perfection, in China's nonproliferation policies over the past few years have brought the prospects for nuclear cooperation closer than ever. And the United States is currently continuing to negotiate with the Chinese Government to fulfill the conditions outlined by Congress to permit peaceful nuclear cooperation.

We have heard a lot today about the summit and the leverage that maybe we have, and also the fact that maybe the Administration is rushing in haste to deliver. I can only offer the observation that over the last 15 or so months that I have been somewhat actively engaged in this issue in talking with Administration folks, they have emphasized in every interaction I had with them the importance of telling the Chinese from every industry source I could marshal how important it was for the Chinese to do things like implement export controls and other actions, like stopping sales to Iran and to unsafeguarded facilities in Pakistan for the Administration to be able to move forward on this particular activity.

It is not clear to me that we are rushing in haste. I think the summit may actually have provided some leverage for our negotiators in getting the Chinese to agree to things that maybe henceforth they would not have rushed to agree to, so I think it is a double-edged sword we should keep in mind.

However, assuming these negotiations are successful, the industry believes there are significant benefits to the United States from opening trade with China. Among these are assuring that China has the safest nuclear program possible by providing them with access to both our technology and, of equal importance, our expertise. We operate the largest, most successful program in the world. We believe that achieving nuclear nonproliferation goals are enhanced by the interactions; and I think Jennifer pointed to what happens when the community is engaged. And we think that will help in nonproliferation space, that is, once you get over the hurdles of satisfying the specific certification requirements.

As Ambassador Gallucci mentioned, we think greenhouse gas and other atmospheric emissions will be reduced in China and in the global environment due to a successful China nuclear energy program; and finally we believe that U.S. employment, the U.S. economy and the current balance of trade with China will benefit significantly as a result of commercial nuclear trade.

Let me put the Chinese commercial nuclear program in perspective. China currently has three operating nuclear plants with a total installed capacity of 2100 megawatts. Two of these plants are French designed, 900-megawatt plants; the other is a 300-megawatt Chinese plant. China is already planning to build or is currently building 4,650 megawatts of new nuclear generating capacity, French, Canadian and Chinese design. China has also indicated its intent to purchase two large nuclear units from Russia.

Moreover, China has an ambitious program to expand its nuclear energy generating capacity, including plans that have 20,000 megawatts on the grid by 2010, and a total of 50,000 megawatts by 2020; that is the equivalent of two new reactor orders each year.

So really the relevant question, once we satisfy the certification requirements, is not whether China should develop a nuclear energy program; that question has already been answered. The question is whether the United States should be the only nation in the world that excludes itself from access to the China market.

Current U.S. and new U.S. advanced reactor designs represent the best options for the growing Chinese nuclear program. We believe the most effective way to develop a rapidly growing nuclear program like that planned by the Chinese is to use a limited num-

ber of standardized reactor designs. This is a model originally developed by the French nuclear program, and one that the U.S. nuclear industry will use as it looks toward future electricity needs.

From this perspective, the United States should encourage the Chinese to select a few specific reactor designs and to build families of plants using standardized designs. This approach facilitates effective and efficient engineering, procurement, training, quality assurance, maintenance and operations. Of equal importance, it helps them to develop an effective regime for regulating a rapidly growing nuclear program.

From a nonproliferation perspective, we believe once the congressional requirements for certification are satisfied, opening commercial trade between China and the United States will further enhance achieving U.S. nonproliferation goals. Removing current restrictions against civilian nuclear commerce with China requires the President to provide Congress with the specific certifications and reports related to how well China is satisfying some of the requirements mentioned by my colleagues at the table.

We in the industry are pleased that China has demonstrated progress in some of these areas and we hope that they make progress on all of them so certification can be made when it is appropriate. Once the Chinese have satisfied the certification conditions imposed by the Congress, we believe fully implementing the Agreement for Cooperation between us and China will contribute to both reinforcement of the existing Chinese nuclear nonproliferation infrastructure and a strengthening of the infrastructure through future commercial, laboratory and governmental interactions.

I would agree strongly with what Ms. Weeks said. The U.S. nuclear industry is fully committed to ensuring the integrity and effectiveness of the worldwide nuclear nonproliferation regime. Clearly, without an effective nonproliferation regime, the benefits that the uses of peaceful nuclear technology provide society will be curtailed or lost.

We believe that the current improvements to China's nuclear nonproliferation system are a direct result of the desire of China to have access to U.S. commercial nuclear technology and to also increase competition among potential suppliers.

I would agree with Ambassador Adelman that a primary objective is to get China to become part of the international community adopting appropriate norms, and from that perspective, as the nuclear industries in China and the United States begin to work together as partners to further develop their program, we believe the transfer of operating experience in nuclear safety and safeguard cultures will strengthen both the safety and the nuclear nonproliferation regimes in China.

As Ambassador Gallucci mentioned, from an environmental perspective, nuclear technology in China will play a role in protecting the global environment, as that country embarks on a program to develop 500,000 megawatts of electrical generating capacity by 2010, more than double its current electric generating capacity. Nuclear energy will be particularly important to serve major coastal metropolitan areas that are located far from China's vast coal resources and that already are experiencing poor air quality.

I think, as Ms. Weeks pointed out, from a U.S. standpoint, selling any sort of power technology to China—it is a major market, it is the largest market in the world; and it is not just nuclear, it is any kind of technology. From an environmental standpoint, the strategic significance of nuclear technology is that they are going to be locating their nuclear plants on coastal sites, located closest to their major urban commercial and industrial development, and that will help them not continue to put out air pollution, besides the fact they have trouble just getting coal to the sites. So it is a strategic location, even though, as pointed out, it is only 4 percent to 5 percent of their electricity supply by the year 2010.

Nuclear energy already plays an important role in avoiding emissions of all forms of atmospheric pollutants. The generation of electricity by nuclear power produces no greenhouse gases nor any sulfur dioxide or nitrogen oxides. One has only to examine the importance of nuclear energy toward reducing carbon dioxide emissions in the United States to see the benefits. Current U.S. nuclear plants reduced total U.S. carbon dioxide emissions by more than 147 million metric tons of carbon in 1996. Without nuclear energy, the U.S. electric utility annual emissions of carbon dioxide would have been approximately 30 percent higher.

Finally, turning to the economic perspective. From a U.S. economic perspective, China represents the largest new electricity market in the world, and the export dollars created by reactor orders are substantial. For example, two new French-designed nuclear power plants being built at Ling Ao are worth \$2.7 billion to Framatome. A Canadian nuclear plant order at Qinshan is worth approximately \$3 billion to the Canadians.

Exporting nuclear power plants and related services involve thousands of U.S. jobs and billions of dollars in export value. For every American 1,000-megawatt nuclear unit, we can expect between \$1 and \$2 billion in exports. Using Department of Commerce conversion ratios, this translates into between 15,000 and 30,000 U.S. jobs. These jobs fall in the professional, higher salary classifications and in specific manufacturing and equipment product areas. China is moving forward with its commercial nuclear program, and these jobs and export dollars will be won or lost over the next few years.

In addition to the initial export opportunities—and we say “the next few years” because we think they are going to settle on standardized families of plants in the next few years, that will lock in the type of reactor designs they will look for, at least for the first round of families.

In addition to the initial export opportunities, significant jobs and exports are available to provide ongoing plant support services, fuel and other broader program services. Potential exports to China between now and 2010 just for new plants can be as much as \$15 billion.

Clearly, the United States can and should capitalize on this opportunity. The economies of our competitors from France, Canada and even Russia are already benefiting from sales in nuclear technology to China.

In conclusion, cooperation between the United States and China on commercial nuclear technology cannot and should not proceed

until the President has concluded that China has fully met the conditions for certification established by the Congress. Once the certification requirements are satisfied, however, it is in the best interest of the United States to move forward with implementing the agreement with China for nuclear cooperation. The subsequent interactions between U.S. nuclear energy experts and the Chinese can only enhance their understanding of how to develop and operate a safe nuclear energy program and how to further strengthen their nuclear nonproliferation infrastructure. The availability of U.S. technology, as China approaches near-term decisions in standardizing its future nuclear power plant program, provides an opportunity for creating significant jobs in the United States and improving the balance of trade with China.

Finally, U.S. nuclear technology would enhance the safety of China's nuclear energy program while realizing critical environmental and clean air benefits.

Again, thank you, Mr. Chairman, and the Committee for inviting the U.S. industry to participate in this hearing and I look forward to dialog and discussion.

Chairman GILMAN. Thank you very much, Mr. Fertel.

[The prepared statement of Mr. Fertel appears in the appendix.]

Chairman GILMAN. I want to thank our panelists. It has been an excellent panel today, and I know my colleagues have some questions. I will be brief.

I would like each of our witnesses to address the following query: Do you believe it is in our national security interest to proceed with implementing this agreement at this time?

I will start with Mr. Leventhal.

Mr. LEVENTHAL. Mr. Chairman, the answer to that question is, what types of certification findings the President is prepared to make and what the hard evidence is behind them. But as I stated in my initial presentation, I think even under the best of circumstances, one cannot assume on the basis of Presidential certifications that all the problems are over.

I recall again that in 1985, at the time Congress was approving the agreement that the Administration then had negotiated, China was violating a basic nonproliferation norm by sending an unsafeguarded, potential military production reactor to Algeria without the United States even knowing it.

So my short answer to your question is that even under the best of circumstances, on the basis of commitments now being made by China, there will not be sufficient confidence to permit the activation of the agreement without continuing concern; and therefore, I hearken back to the proposal I put forward for a staged activation of the agreement, if the President is prepared to make the certifications now, such that trade could not begin for at least a year and then only after recertification by the President, that the original findings he made still hold true.

Thank you.

Chairman GILMAN. Ambassador Gallucci.

Mr. GALLUCCI. Mr. Chairman, I think the answer to that is, "yes, if". And if the President can certify that China is not exporting to unsafeguarded facilities in Pakistan or anywhere else, if he can certify that there is no significant nuclear cooperation of any kind

with Iran, and if the Chinese put in place a convincing export control process that includes control of dual-use items, and if there is no outstanding issue over other exports and weapons of mass destruction, particularly chemical and ballistic missiles.

And with respect to all these "ifs", Mr. Chairman, that troubling little quote that Ken Adelman read from the CIA would have to be explained by the Administration as to how, subsequent to the assurances by the Chinese in May 1996, the Chinese still managed to be in compliance. If that explanation can be pulled off by the Administration, then I would say the Administration would be on firm ground to proceed.

Chairman GILMAN. That is a lot of hurdles and a lot of ifs.

Mr. GALLUCCI. If we had some ham, we could have ham and eggs, if we had some eggs, Mr. Chairman. There are a lot of ifs there.

Chairman GILMAN. Thank you.

Ambassador Adelman.

Mr. ADELMAN. No.

Chairman GILMAN. Thank you.

Ms. Weeks.

Ms. WEEKS. I would say also the "yes, if" answer, and obviously none of us here have access to the current intelligence reports in the state of play, so I want to commend the Committee for engaging so early and looking into these issues because I think you have a big part to play in this.

Chairman GILMAN. So your answer to my question is what?

Ms. WEEKS. Yes, if.

Chairman GILMAN. And Mr. Fertel.

Mr. FERTEL. Thank you, Mr. Chairman. My answer is consistent with what I said before: Yes, given that the President can certify to the satisfaction of the Congress.

Chairman GILMAN. Thank you.

Mr. Hamilton.

Mr. HAMILTON. Well, let me join the Chairman in thanking you for the panel discussion. It has really been very good. It is a special pleasure to have the two former ambassadors with us and we welcome them, as well as the other members of the panel.

I gather that none of you would advise the President today to certify that China is not assisting any non-nuclear weapons State to acquire nuclear weapons. In other words, none of you would say, "Mr. President, go ahead and certify," on the basis of what you know today. Those of you who answered yes, answered yes, if, and the ifs were very significant ifs.

Mr. GALLUCCI. Mr. Hamilton, if I might, it is an if, but what I understand the Administration has said, notwithstanding this quote, the Administration has said, I believe, that it has no evidence that China has acted in a manner inconsistent with its assurances of May 1996.

Now I think they have to square that with this little quote here from the Director of Central Intelligence. I am not sure how they do that, but if they can, I am personally unaware of activity inconsistent with that, but that means nothing. The question is what the intelligence shows and what is available to you and the Administration.

Mr. HAMILTON. And the key is the 1996 agreement for you?

Mr. GALLUCCI. For me, the key question is, is there a fire wall created by those assurances? And there is a reasonable case to be made that you have essentially a year and a half of behavior by the Chinese consistent with their assurance not to assist unsafeguarded nuclear facilities.

Mr. HAMILTON. Let me ask the panel this question. If you look back over the past, I don't know, several years here, what is the trend line in China? I mean, do you see improvement with regard to China's willingness to meet our concerns on nonproliferation, or are they just as bad today as they were 20 years ago or 10 years ago? Is there improvement, in fact, as several of you, I think, indicated?

Mr. FERTEL. I think I would defer a little bit to the experts here but just from an industry observation, we clearly have seen improvement on just what has been published. I mean, they have become party to the Nuclear Nonproliferation Treaty, which they weren't. They helped us aggressively support indefinite extension of it. They signed the Comprehensive Test Ban Treaty. They signed the Chemical Weapons Convention.

Just last week they agreed to join the Zangger Committee, and I agree with Jennifer that that will probably lead them down the right road for looking toward full-scope safeguards, and that is something we would like to see down the road. They have published nuclear control regulations. We understand that they are looking at what they can do in the dual-use regulation area. I again would defer to particularly Bob and Ken on this, but my understanding was that 10 years ago they were not wanting to do anything in nuclear nonproliferation.

Mr. HAMILTON. All of you see some improvement in the record, is that right?

Mr. ADELMAN. I see some improvement in the diplomatic record.

Mr. HAMILTON. I understand many of you do not see adequate improvement, but you see some improvement.

Mr. ADELMAN. In the diplomatic record, which is quite different from the behavior of helping Iran, helping Pakistan.

Mr. HAMILTON. You don't see any improvement in the nonproliferation area?

Mr. ADELMAN. The critical thing is their action. Has their action over the last several years been consistent with their increasing diplomatic pledges to international agreements? The answer to that has to be no. As the diplomatic agreements go up, their behavior is still quite spotty and in some respects, quite deplorable.

Mr. HAMILTON. Mr. Leventhal.

Mr. LEVENTHAL. I would just make the point, it is the difference between the question of what they say and what they do, and clearly they are subscribing and adhering to more of the international norms and the international treaty arrangements. I do not subscribe to the notion that simply by joining the Zangger group, that it is inevitable they will accept full-scope safeguards. I think it is equally plausible they may withhold their vote and thereby block consensus for the Zangger group doing what all the parties to the NPT, including China, committed to at the extension of the treaty, which is to subscribe to the full-scope safeguards principle.

I think we have to look into why the Chinese refuse to join the Nuclear Suppliers Group. Now some of it has to do with their general reluctance to join Western institutions that they regard as highly discriminatory, but we have to also look at the bottom line as to what the dangers are if they do not actually subscribe to full-scope safeguards by joining the Nuclear Suppliers Group, and their whole relationship with Pakistan is still very much outstanding.

Mr. ADELMAN. Better behavior might not be good enough. Probably Saddam Hussein's behavior is better over the last year than in previous years, but yet I don't think anybody on the Committee would want to normalize relations with Iraq.

Mr. HAMILTON. Do we have, and I will conclude with this, Mr. Chairman, do we have any leverage with China because they want to bring into force the 1985 agreement? Does this give us some real leverage with China?

Mr. LEVENTHAL. Well, I would hope so, and that is why I propose certain things that are described to the other members of the panel as raising the bar and making perfect the enemy of the good. But in fact the United States has been raising the bar consistently since 1985, and I think the leverage should be applied to the maximum. And whatever we can get at this point should still be subject to conditional approval in the sense that if the President certifies, there ought to be some decent interval of time that will pass to help ensure, to the satisfaction of the executive branch and the Congress, that this time they really mean it.

Mr. GALLUCCI. If I might, Mr. Hamilton, it seems to me we are on the right track, though I don't think this panel can help you very much with the question of the performance of the Chinese. I think we have an impression that it is clear that it was awful in the past, and I have the impression that it has been better of late, but the precise reading of Chinese behavior is going to have to depend upon the intelligence which I don't think is available to any of us.

On the second question you ask, though, I find Paul's answer troubling. I don't believe that the United States should behave that way. If we set a standard and the Congress sets a standard and we proceeded in negotiations with the Chinese, we ought to stick to that standard and then, indeed, we should try to go beyond it, but I don't think we should insist and thus change the rules of the game in the middle of the game.

Chairman GILMAN. The gentleman's time has expired.

Mr. Graham.

Mr. LEVENTHAL. I just want to clarify. The point I was making is that the United States demand that China agree not to supply unsafeguarded facilities, the United States demand that China establish an export control system, are not part of the statutory requirements for Presidential certification either. These are things that the U.S. Government felt were necessary for China to demonstrate its nonproliferation credentials.

I think full-scope safeguards should be included in that, and I also think real safeguards should be applied to U.S. imports in China, simply because of China's record of diverting non-nuclear items from civilian to military use. We have to approach these things with our eyes open and to say this is raising the bar unrea-

sonably. I think it is not consistent with the ways that the U.S. Government has already raised the bar.

Chairman GILMAN. The gentleman's time has expired.

Mr. Graham.

Mr. GRAHAM. Thank you, Mr. Chairman.

Regarding the conditions that we would put on the Chinese and the limits that we will some day have to deal with, if we do nothing, if we just continue to drag out this process and never engage the Chinese in terms of a domestic nuclear policy or a peaceful purpose of nuclear energy, where will the Chinese be in the next 20 to 25 years in terms of nuclear capability, and will other countries come in and fill the void?

Mr. ADELMAN. Let me say, Congressman Graham, I am not for breaking off a dialog with the Chinese, I am not for isolating the Chinese. I am for continuing to work with the Chinese. I am just not for bending the rules that we have established and for giving up what I consider very good leverage to bring the Chinese into the international acceptable norms and standards that are prevailing today.

Mr. GRAHAM. I share that concern, nor am I for bending the rules, and I would like to extract as much leverage as possible. But having been a lawyer before I got here, one day you got to sit down and do the deal.

Mr. ADELMAN. But when you were a lawyer, you didn't do deals that weren't good for you to do. You could walk away and tell your client, "This is a bad deal for you." That is the responsibility of the lawyer.

Mr. GRAHAM. You have to be able to walk away from the table, but if it is in your client's best interest, and I believe it is in our best interest to engage the Chinese in the nuclear arena, to try to get as much control over proliferation as we can. And since they are the world's largest country, it would be good to have a dialog with them that is substantive, and I think the way to do that is to move forward, but my point is as to what point in time do we lose our leverage. If we keep making conditions that are a year delay in conditions that follow forever, that unlike our competitors in this market—Mr. Fertel, maybe you can answer that, at what point in time does the leverage go away simply because the market is being filled?

Mr. FERTEL. I think the short answer to your question, Congressman, is that we have already seen the French, the Russians and the Canadians there selling, and they are just licking their chops to keep selling, so it is not like no one is going to sell to the Chinese.

I think the other thing in this whole dialog that is important, as far as timing, is this concept of families of plants. From a nuclear safety standpoint, we clearly would emphasize, and I think the Chinese appreciate this, that they want to grow their program in families of plants because it is so much better to manage the program from a safety standpoint and manage the regulatory infrastructure as you grow it.

So as I said earlier, they will choose, sometime in the next few years, some families of plants that will provide the basis for their current evolution, and they will go with a number of units of that

type for some period of time and then they will evolve to a new design down the road. So timing is somewhat critical.

I think the other thing in this whole debate that is important and again I will emphasize, we believe the President should demonstrate to your satisfaction that they have satisfied the certification requirements, no doubt. After that, the agreement does not cause technology to go anywhere, it provides a framework for commerce.

You can't move anything out of this country without an export license, that is, a license either from the NRC if it is reactor internals and reactor cooling pumps, a license from the Department of Commerce if it is dual use, or a license from the Department of Energy if it is just technology. It doesn't just happen.

And as far as the concept of trust and verify, there will be a period of years. If for some reason you could move forward in the next 6 months on certification and if U.S. industry was successful in bidding, you would not move technology for a couple of years. It doesn't happen overnight. So I think that there is this period of time.

Mr. ADELMAN. I think it would be the worst of all possible outcomes, Congressman Graham, to give the certification and then deny or pull the export license. This notion of nuclear interruptus would be disastrous for American business. That would be worse than just saying no.

Mr. FERTEL. I think, speaking for American business, at least at this hearing, we would not advocate you pull a license unless the Chinese are doing something egregious, and if they are doing something egregious and inappropriate, you damned well shouldn't issue the license. What would be worse right now, from an industry standpoint, would be to impose new conditions, set a new milestone out there with uncertainty, because then how do the Chinese know and how does U.S. industry know they can sign a contract with any confidence that they can go forward? If there are actions that are inappropriate, well, then, you don't issue the license. That is why we have the export control regime. Why would you even have it if you couldn't exercise it correctly?

Mr. CHAIRMAN. The gentleman's time has expired.

Did you want to comment, Mr. Leventhal?

Mr. LEVENTHAL. I would just add to that, based on what Mr. Fertel said, I think that is a further reason for Congress passing legislation, establishing the basis on which trade could continue if the certification were made. Thereby, China is notified in advance that if the President fails to recertify at the time a license is applied for, that they will not be able to get the assistance, and that would be a further inducement for China to continue on the path that it appears to be in terms of its stated intentions. Unfortunately, their actions do not necessarily reflect their stated intentions, and by the way, intelligence is not necessarily a perfect source of information either, as, again, the Algerian case demonstrated at the time in 1985.

Chairman GILMAN. Mr. Berman.

Mr. BERMAN. Yes, a couple points. First, Mr. Fertel, you talk about the Russians, the Canadians, the French, they will be there. If the Chinese seem to have a high interest in our certification, I

would assume it is because they either want the U.S. competition in the mix or think the U.S. suppliers are more reliable, better, whatever. Is that a fair conclusion?

Mr. FERTEL. I think that is accurate, Congressman Berman.

Mr. BERMAN. If that is accurate, then one would think we have some leverage to expect the Chinese to comply with reasonable norms of behavior in order to get the advantage of the benefits of the U.S. industry being a supplier. Is that fair?

Mr. FERTEL. I think that is fair and I think that is why we are seeing some of the behavior which has been positive.

Mr. BERMAN. Let's talk about the behavior, and I would like to educate myself a little bit here. I am a little confused between unsafeguarded facilities versus fully safeguarded and what the distinction here is. Anything to Pakistan, a non-signer, in the area of nuclear, should that disqualify China from being certified?

Mr. FERTEL. My understanding is that since the ring magnet incident—

Mr. BERMAN. I am not asking what has happened; I am asking what the standard is.

Mr. FERTEL. I think the standard is they should not send any of their technology to Pakistan that goes to an unsafeguarded facility. And my understanding, again, is they are adhering to that particular standard.

Ms. WEEKS. Congressman, Pakistan has some nuclear facilities that are safeguarded because the countries they bought those specific facilities from required them to accept IAEA inspections at those facilities. They have others that are not safeguarded because they are not a member of the NPT and have not opened their entire nuclear complex.

Mr. BERMAN. When the Administration says no breaches since May 1996, are they saying no exports of nuclear technology to unsafeguarded facilities in Pakistan?

Ms. WEEKS. That is right, yes.

Mr. FERTEL. That is clearly what they said.

Ms. WEEKS. Yes. And the Administration is not trying to get China to curb all of its nuclear trade with Pakistan, only to the unsafeguarded facilities. But in Iran—because the Administration believes Iran has a nuclear weapons program—even though Iran has accepted full-scope safeguards, the Administration is pushing China to cut off all of its nuclear commerce with Iran, so they are actually going further in the case of China's relationship with Iran than what is required.

Mr. BERMAN. There is a certain something funny about that. Both countries, we believe, have nuclear weapons programs. But because Pakistan safeguards some of their facilities and even though Iran supposedly safeguards all their facilities, we are saying nothing to Iran, which I agree with, but we are saying OK to Pakistan?

Ms. WEEKS. That is right.

Mr. BERMAN. Now I would like to just, on the export control issue, is it appropriate to say that we should expect of China not merely that they participate in the Zangger group with respect to established nuclear materials and what they are exporting and licensing; but that this dual use, which might deal with sophisti-

cated computers, I assume, and other kinds of issues that could have conceivably a nuclear weapon as well as non-nuclear uses, that China should have an export control system that covered that as well, is that reasonable for us to insist on before we certify?

Mr. LEVENTHAL. Well, the fact that they have put an export control system in place is all to the good. The question as to whether it is effective or not, whether it is simply a show piece or whether it really has effect is the important question.

Mr. BERMAN. That is certainly an important question. The other important question is, should the list include a dual-use list that goes beyond what joining the Zangger group implies?

Mr. LEVENTHAL. Yes. It should have two things. It should have a dual-use list equivalent to the Nuclear Suppliers Group and it should have a full-scope safeguards requirement.

Mr. BERMAN. Tell me what that means again, one more time.

Mr. LEVENTHAL. Full-scope safeguards means a country, and by the way, every major supplier now adheres to this, will not export to any country unless that country agrees to put all of its nuclear facilities under safeguards, so Pakistan would be disqualified and India would be disqualified.

Mr. BERMAN. Mr. Chairman, one last question. Read the quote one more time from the Director of Intelligence.

Chairman GILMAN. Well, I have the full quote. The Ambassador had trouble reading it. Last summer the CIA reported, and this is from the CRS report, "During the last half of 1996, China was the most significant supplier of WMD, weapons of mass destruction, related goods and technology to foreign countries. The Chinese provided a tremendous variety of assistance to both Iran's and Pakistan's ballistic missile programs. China also was the primary source of nuclear-related equipment and technology to Pakistan and a key supplier to Iran during this period. Iran also obtained considerable chemical weapons-related assistance from China in the form of production equipment and technology."

Mr. BERMAN. Thank you, Mr. Chairman. I think when you hear that, I do think it would be good in a classified session, we have been having briefings with one and the other, but with our attention deficit disorder problems, to get them both in the same room at the same time might be interesting.

Chairman GILMAN. The gentleman's time has expired.

Mr. Manzullo.

Mr. ADELMAN. There is no way to square compliance with the quote.

Mr. MANZULLO. I just had one question, followed by a comment. Last year we fought a war and lost it with Eximbank, which because of Administration policy refused to allow American suppliers to be involved in the Three Gorges project of China, and I don't know how much we raised on that. And now the Canadians are in there just sopping it all up, and there is not one bit of nuclear energy in there. This was the sale of trucks and personal property, generators.

And now the President is going to have to come back and say, "Well, you know, we didn't sell the Three Gorges because we had some problems with the environment." The project was built anyway. American presence is very limited there.

And we have seen the same thing taking place in the area of nuclear energy, but now the threshold is a lot heavier because a truck is not a weapon of mass destruction and you can't take a truck and turn it into a fissionable material. So I just, I guess I offer that if there are any Administration people here, that there is absolutely no consistent foreign policy that this Administration has with regard to exports, and that applies to a nuclear issue also.

Chairman GILMAN. We have 5 minutes remaining for a vote. I am going to ask the panelists to be patient with us. We will go over and vote and continue the panel. Some of our Members have questions.

With respect to the issue of China's nonproliferation record on their performance, I refer to all memorandums issued by CRS analysts outlining chronology of Chinese weapons-related transfers, and I ask unanimous consent that these be made a part of the record.

The Committee stands in recess.

[Recess.]

Mr. BEREUTER. [presiding.] The Committee will resume its proceedings. Chairman Gilman wanted me to proceed. He will be back shortly. Sorry we had to take that break. I know it is undoubtedly difficult for the Committee witnesses.

Ambassador Gallucci gave us four "ifs", and I marked those down. These "ifs" relate to Pakistan, Iran, export control process and other outstanding weapons of mass destruction issues. I think that the House and perhaps the Congress will want to express itself on the subject of certification and cooperation with China on nuclear cooperation issues. So I am interested in seeing what this Member, or perhaps this Committee, can responsibly do in framing a resolution which expresses our views to the executive branch. It seems to me that those four ifs can be addressed.

Mr. Leventhal, you have two suggestions that I have been able to identify clearly. On page 16, you say that the United States "should include a commitment obtained from China that it will join all other major nuclear exporters by becoming a member of the Nuclear Suppliers Group, or at least by adopting the NSG's requirement of full-scope safeguards and its agreed list of dual-use items for export control." And, second, "a commitment from China to accept safeguards on its nuclear imports from the United States." So those could be two more items on which the Congress could express itself.

I would ask the panel, what beyond that can the Congress responsibly do in expressing its views to the Administration on this issue?

Mr. ADELMAN. Mr. Chairman, my view is quite clearly to look at the nuclear issue in the larger context of Chinese adherence to a whole host of issues that have to do with conforming to the international standards of today. I know that is beyond the scope of this hearing. But it is really at the heart of the U.S.-Chinese relationship. They can piecemeal us to death.

But this idea of a comprehensive approach to China is exactly the approach, as I mentioned to you in the opening, that China used toward the Soviet Union, and I thought with very good effect, from a very poor and powerless base in the 1970's and the 1980's.

I would recommend that Congress keep hammering home the point that what is at issue is China's adherence to international norms and standards prevailing today. These are not American dictates. These are generally accepted across the board.

Mr. BEREUTER. I have been the chairman of the Asia and the Pacific Subcommittee since January 1995, and I will just share with you my frustration on attempting to frame a fairly comprehensive set of policies with respect to the People's Republic of China. In my judgment, in the absence of an explicit, comprehensive statement from the executive branch, I think we have a responsibility. But, any time you attempt to begin to move legislation which might fill that description, you spend most of your time just batting away amendments that are very destructive of our national interest, in my judgment. There is so much frustration bottled up and so many separate agendas here, sometimes having little to do with the foreign policy, that most of my time, frankly, is aimed at stopping legislation which is damaging. I have really no confidence that I can attempt to bring anything that is a comprehensive framework of foreign policy and affecting our relations with China without having it changed beyond the point of recognition.

Mr. ADELMAN. I would just say to you: Welcome to the NFL. And welcome to the legislative process.

Mr. BEREUTER. I would like to start out with an easy game. Ms. Weeks, did you want to comment on my basic question and not my frustration here?

Ms. WEEKS. I am tempted to say I share your pain but that would be a little clichéd. I think you are right to be looking for ways that the Congress can express itself in a substantive way on this issue, and I have two suggestions.

One is, I thought Ambassador Gallucci's formulation of how to link China's chemical, biological and missile exports with the nuclear issue was a good one. I don't think we should hold up nuclear certification until we get satisfaction from China on all of those issues, but it certainly would be useful for the Congress to pass language stating very clearly that if China violates its pledges and its commitments on these other areas, that that would be a very significant cause for holding up nuclear licenses.

I think also the Committee should look at what the opportunities are for joint U.S. work with the Chinese on some of the issues that I mentioned, like building up their export control system. I can give the Committee staff names of people at the national labs who are thinking about where the best areas for U.S.-Chinese cooperation might be, because that is something we can offer to China that is in our interest. They need the help, they need to figure out how to train people to do inspections and end use checks and all the things that go into having a working system, and that is something that we could use as a positive incentive that is good for us too.

Mr. BEREUTER. Thank you for your suggestions. I appreciate it. Anyone else? Mr. Fertel.

Mr. FERTEL. Sort of going down the same road a bit that Ms. Weeks was going down, I think the Congress could actually do good by maybe encouraging the behavior—and, again, I am hoping that, as Ambassador Adelman said, the diplomatic actions are reflected in the actual behavior—but by encouraging the continued behavior.

I think imposing additional requirements may not do as much as emphasizing the fact that the Congress is looking at what is going on between the U.S. and China on nuclear nonproliferation, that they are encouraged by the actions China has taken, that they encourage China to continue to join the world nuclear nonproliferation organizations, that they encourage the United States to do some of the things Ms. Weeks said.

And I think, again, I put a lot of stake in the integrity of our process, on our side. And what I gather from some comments made to me, maybe Members of this Committee don't have as much faith in the integrity of the export control process on our side or the implementation of it. Well, if that is the case, then maybe what the Congress wants to do is emphasize to our side to exercise their responsibilities under the law to do what is right.

Mr. BEREUTER. Our side being who?

Mr. FERTEL. The U.S. side. I mean, again, I look at the agreement as a necessary but not sufficient condition for trade with China. It provides a framework. You then need to, first of all, win a sale; and the second thing you need to do is get all the licenses and permits to do it, and I would expect if our export control regime works appropriately, any egregious behavior by the Chinese would result in no exports. While from an industry standpoint that is not a desirable outcome, it is certainly more acceptable than violating nonproliferation laws.

Mr. BEREUTER. Thank you. So you believe we can stop an egregious violation by the licensing procedure?

Mr. FERTEL. I certainly expect that is the intent of any export control regime, the same way we would expect the Chinese to be able to do that if they saw an egregious behavior by somebody they were exporting to. If we expect them to do it, we sure should be able to do it.

Mr. BEREUTER. I have one final question before I turn to Mr. Sherman. What would be the reaction to an amendment to the 1985 law which would extend the period on which the certification lies before the Congress from, say, 30 to 90 days, and then has an expedited procedure for consideration of a resolution of disapproval?

Mr. LEVENTHAL. Mr. Chairman, I think at this point in time, the Congress is not in a position to disapprove the agreement that was approved in 1985. I think what Congress is in a position to do is to establish a process after certification by the President.

Mr. BEREUTER. I am talking about a disapproval of the certification.

Mr. LEVENTHAL. I'm sorry?

Mr. BEREUTER. I am talking about an amendment which would provide for a disapproval of the certification.

Mr. LEVENTHAL. Oh, I see. To permit more time than 30 days. Well, I think that might well be useful. Our proposal goes to the question of what happens after certification, but I think allowing Congress more time to consider certification is probably to the good.

But, again, I would underscore the proposal we made, which is that even after certification, based on whatever intelligence is available at that time, there is still the uncertainty that we know

everything that there is to know, or that we can guarantee good behavior on the part of the Chinese in the future, so there needs to be a waiting period. We propose a year after certification before anything can go forward, and then only upon recertification, when there is an export license application or a request for approval to the Department of Energy.

Mr. BEREUTER. Thank you.

Ambassador Adelman, given your history and your involvement, I am particularly interested in what your reaction would be.

Mr. ADELMAN. Mr. Chairman, I would say as a minimum effort, I guess that would be OK. My experience over the years has been that things in Congress don't move at lightning speed. To build in slower devices in Congress is not, you know, in general what the U.S. Government needs for good governing.

What the U.S. Government needs for good governing is the courage to look at what Chinese behavior has been and to say within 30 days—or if you want to give yourself 90 days I have no problem with that, but in a reasonable amount of time—that theirs is not acceptable behavior.

So I don't think that more time is going to solve much. It builds in a natural inclination to take more time, and like I say, the U.S. Government is so slow now on making critical decisions that I am reluctant to say, "Let's have an amendment to slow things down." There is no rush in the U.S. Government. It is just a lack of courage at times.

Mr. BEREUTER. I have noticed that.

Mr. Sherman.

Mr. SHERMAN. Thank you. I think it is wise that we are holding these hearings. China's behavior, whether it is nuclear materials to Pakistan or especially Iran or their ballistic missiles to Syria, poses serious threats not only to U.S. interests but to world peace in general.

I have one quick factual question that I think any of you can answer and that is, as I understand it, violation or not, decertification under this agreement leads to only one type of sanction, and that is limitation on U.S. exports to China. Is that correct, Ambassador? A simple factual question. If we did not certify China under this agreement, if we found that they were in clear violation, the only sanction would be limitations on U.S. exports.

Mr. ADELMAN. That is my understanding.

Mr. LEVENTHAL. But it is a Presidential determination, not a congressional determination.

Mr. ADELMAN. I think that is right.

Mr. SHERMAN. And I think Mr. Manzullo pointed out very well our relationship with China is this: If they despoil their environment, we cut off our left hand. If they engage in nuclear proliferation, we cut off our nose. This is not a terribly effective sanction.

Yes, China would like to have U.S. companies bidding on nuclear projects so that they can buy from France or some other nation that abstains from criticizing their domestic rights policy, but they are going to have some price pressure on other countries they are in fact going to import from. But this is of slight significance as compared to \$45 billion worth of goods shipped to the United States.

It seems as if our foreign policy laws were written at a time of great arrogance, a belief that we were the only source of certain commodities or technologies and that we would punish other countries by not exporting to them. Those days are gone, and we certainly ought to take a look at stronger sanctions.

Now I voted to continue Most-Favored-Nation status for 1 year, as the majority of Congress did, in part because we were not offered an alternative of Most-Favored-Nation minus, that is to say, give the effect of Most-Favored-Nation status with some occasional sanction.

I will tell you this, if we could have Most-Favored-Nation status but a 5 percent tariff on all textiles or shoes coming in from China if China did not cooperate with us on nuclear proliferation issues, we would have a much stronger response, I would think. I would like to hear from the panelists on this. Does the Chinese Government have the capacity to prevent its entities from exporting these devices of mass destruction and related technologies, and would they be more likely to do so if they felt that they would lose a significant portion of the U.S. market?

Mr. ADELMAN. The general point you bring up, Congressman, on other countries filling in if the United States does not proceed is a very good point. It is a point that applies in the whole field of international relations called the use of sanctions.

You can always find somebody out there who is going to sell bad things to bad countries, OK? And if your standard is, "Does everybody comply to the sanctions?" Your answer is always going to be "No". So you will never have any sanctions at all.

Then, do sanctions help? To look at historical examples, I would say, "Yes, sanctions do help." They help, obviously, to raise the price, raise the difficulty of obtaining some goods.

The nonproliferation sanctions over the years, despite the leakage, have contributed to the most successful arms control initiative and exercise in history. If you go back to the 1950s' strategic literature, you find article after article predicting a world full of nuclear weapon States in the 1970's.

In fact, President John F. Kennedy gave a speech in 1963 in which he said by 1975—which is already 22 years ago—by 1975 there would be 15 to 20 nuclear weapon States. That was not greeted with gasps. That was expected in the literature. We are now 22 years later. We do not have 15 or 20 nuclear weapon States. That is in part because we have had sanctions against those things, despite leakages, despite difficulties we talked about today.

Mr. SHERMAN. Ambassador, it is very clear that China is a major source of the proliferation of weapons of mass destruction and their delivery systems. It is very clear that they don't fear this act very much at all. It is very clear—

Mr. ADELMAN. That I don't know. All I know is they keep wanting to talk to our U.S. industry very much about nuclear reactors. Now you can't have it both ways, that it is unimportant to them and they really want U.S. products.

Mr. SHERMAN. But they really want American companies in there bidding on the projects so they get a better deal from the French. That is important to them. Is it as important as the Nikes sold in L.A. County alone? I don't think so. The French can always

provide the nuclear weapons, the French are incapable of wearing as many tennis shoes as we do, and that is the one thing that can't be filled in.

I don't think it is a coincidence that the one kind of sanction that would be effective against China is the one that none of us are talking about. Instead, we are talking about cutting off our own exports of goods that China would easily obtain elsewhere, perhaps at a slightly higher price.

Mr. ADELMAN. That the United States traditionally has not been a country like France in terms of export regulations or thrust of our foreign policy. I for one would not want a foreign policy like France's.

Mr. SHERMAN. I am not suggesting that we reduce the sanctions under this act, I am saying we ought to increase them. Yes, we should limit nuclear technology going to China as long as China is a source of this kind of destabilizing action in the world, but for us to ignore their actions when we buy our tennis shoes is to encourage the same kind of behavior that we have seen over the last several years.

Mr. ADELMAN. But there is a qualitative difference between buying Nike tennis shoes and giving them a nuclear plant, isn't there?

Mr. SHERMAN. No. You buy enough tennis shoes, they can pay the extra 10 or 20 percent the French will charge them for a nuclear reactor.

Mr. ADELMAN. Well, I would say that most people, if you would ask them, including most experts, "Is there a qualitative difference between buying tennis shoes and buying a nuclear plant for a few billion dollars?" Most people would say, "Yes. There is a big difference." I would.

Mr. FERTEL. I think, Mr. Chairman, that the Chinese clearly are looking at access to the U.S. market to help the competitive situation over there, but I think it goes beyond that. I think that they clearly recognize that U.S. technology in some respects is like the Good Housekeeping seal. You are getting the best technology in the world, you are getting the operating experience that the U.S. brings, and I don't think it is just to be able to lower the French bid. If it was just to be able to lower the French bid, I don't think U.S. industry would be spending as much energy, time and dollars trying to figure out how to sell to China when that market is available.

Mr. BEREUTER. Mr. Sherman, I think Mr. Leventhal would like to comment.

Mr. LEVENTHAL. I just have a brief comment on your observation. I think in the context of what you just heard from Ambassador Adelman, I think one of the limitations of U.S. nonproliferation policy is that it is narrowly focused on nuclear assistance, and linkage is a dirty word in the sense of spillover to other matters of bilateral and multilateral interests.

Therefore, the way the Atomic Energy Act and the Nonproliferation Act are constructed, the leverage that we apply is nuclear leverage, when in fact the more effective leverage might be the sort of thing that you have described. But up to this point there has been no support for broadening the tools and devices and influences that we might have on the nuclear behavior of other countries by

having our bilateral and multilateral relations in other areas affected by such behavior, and it might be to the good to consider such an unorthodox approach.

I would also just like to make one brief comment on the notion that President Kennedy's original projections were not fulfilled. It is true that there are not the number of declared weapon States in the world that had been anticipated at the time, but we have to keep an eye on the bottom line. And the bottom line in this respect, in my view, at least, is how much atom bomb material there is in the world, particularly material under civilian auspices, and the opportunities that we might expect in the future for rapid conversion of peaceful atom bomb material into military atom bomb material.

That is why our institute has been steadfast in trying to delegitimize the use of plutonium in civilian programs and delegitimize the use of highly enriched uranium in civilian programs. That might be the ultimate litmus test, because if the world does turn in some unanticipated way, we may find that President Kennedy's prophecy was an under estimate of what the nuclear weapons potential of the world is today.

That is why in my testimony I underscore the need to engage the Chinese on whether or not they are going to engage in reprocessing and why, and for the United States to assert influence in that respect, both in terms of the adequacy of safeguards on the materials we send them and to try to influence their policy away from the reprocessing of spent fuel and the utilization of plutonium.

Mr. SHERMAN. One final comment. Yes, there may very well be 10 or 15 nuclear States in the world, albeit 22 years late by that prediction. I would say that it is more likely than not that sometime in the next 50 years an Iranian weapon of mass destruction will kill hundreds of thousands or even millions of people. They may be in Baghdad, they may be in Tel Aviv, or they may be in Los Angeles. If those dead people are in Los Angeles, many of them will die wearing Nike tennis shoes, and for us to say that the \$45 billion U.S. import market is somehow sacrosanct and cannot be linked to such mundane matters as the control of nuclear and biological weapons, is tennis shoes-wise and survival-foolish.

Mr. ADELMAN. But if that dire prediction, if that calamity were to take place, wouldn't it be regrettable that the United States had anything to do with the nuclear part of that?

Mr. SHERMAN. You send tens of billions of dollars to China, no strings attached, and then wash your hands of the fact that the uranium was purchased in Europe, and you can build a psychological barrier between one part of your brain and another and say that your billions of dollars had nothing to do with the nuclear program of China and Iran. But the fact of the matter is, if and when access to the U.S. market is contingent upon a responsible nuclear policy, China will reform its nuclear policy. Until then, a continuation of the status quo is demonstrably ineffective. Perhaps the existing statute applied more rigorously will be sufficient, but the only thing we know is sufficient is to limit the access to the U.S. import market.

Mr. BEREUTER. Thank you, Mr. Sherman. Thank you very much. I ask unanimous consent that my entire opening statement be made a part of the record.

[The prepared statement of Mr. Bereuter appears in the appendix.]

Mr. BEREUTER. I will turn now to Mr. Blunt, the gentleman from Missouri, and unless we have other Members coming, you will be the gentleman who has the last questions today.

Mr. BLUNT. Thank you, Chairman Bereuter. I apologize for being gone. It is one of those normal mornings in Congress. And I may ask questions you have already answered, but this is a significant enough issue that probably the answers could be in the record a couple of times.

Mr. Leventhal, while I was gone, did you become a "yes, if"? It sounded like to me on my return that you think that selling this technology might be appropriate if we could get the right kind of agreements in the interim to—I mean, they have the technology anyway, it sounds like to me, from lots of other people.

Are you saying that really what we should be holding out here for—and Ambassador Adelman, you may want to comment on this as well—is to try to, as we help their competitive bidding or their move to capitalism or whatever we have been talking about here through nuclear bidding, is what we are really holding out for trying to put some safeguards on the nuclear technology and the nuclear capacity that they already have?

Mr. LEVENTHAL. I am not a "yes, if", I am more a "yes, but".

Mr. BLUNT. Let me get that down. I don't have a category for a "yes, but".

Mr. LEVENTHAL. My own view now is that, given the CIA's judgment as to what Chinese activities were in the second half of 1996, is the President cannot really certify in a way that establishes a high degree of confidence that what China is saying now really means something and that what China is saying now will apply indefinitely into the future.

So when I say "yes, but", it means that if the political reality is such that the President is prepared to certify, and Congress does not have the two-thirds vote in each House to basically override that, then the very least Congress should do is to establish a process that delays the actual startup of trade under the agreement triggered by the President's certification; that there be at least a 1-year delay, and then the President would have to recertify before any license could be issued by the NRC or approval made by DOE. That at least puts China on notice that if the President for whatever reason is prepared to certify today, that they are not home free; that there will be a statutory basis for not permitting that assistance subject to the agreement to go forward, unless there can be a clear record of behavior consistent with the commitments now being made.

Mr. ADELMAN. I think that would be a perfectly awful solution for Congress, if I may say so with all due respect, Paul. I think to set up a situation where you give the green light now and then pull the plug later on, when their behavior remains fairly consistent over the time, is very harmful to U.S. business, very harmful to U.S. credibility, and probably not doable.

If you think you are under a lot of pressure from U.S. business right now, and I think there is a lot of pressure—which I think is absolutely legitimate—one of the functions of the U.S. Government should be to help a U.S. business overseas—and it would be very sad if we lose this opportunity—but if you think you are under a lot of pressure from U.S. businesses now while debating certification—you'll be under more pressure after you give a green light—you have export controls or recertification or another procedure after an American company has won the contract. You are going to have one devil of a time saying we didn't really mean it. I think that kind of nuclear interruptus is, as I say, the worst kind of outcome.

Mr. LEVENTHAL. Well, maybe you misunderstood my position, Ambassador. My position now is that I don't see how the President can certify.

Mr. ADELMAN. I think it is pretty straightforward.

Mr. LEVENTHAL. So in that sense I agree with you. But if in fact the political realities are that Congress cannot stop the certification because of the way the resolution of approval was drafted and approved in 1985, then there should be some additional check. That is all that I am saying, and there is an additional check anyway implicit in the export licensing process, because the commission always has to determine that an export is not inimical to the common defense of security.

However, that check is rather weak because the President can override that, as President Carter did with regard to the export of low enriched uranium to India for the Tiruppur reactor. So I am simply saying that it is essential that Congress maintain an effective oversight role and that this not be the end of it, if President Clinton is determined to certify today and Congress cannot stop it.

But I think, and I will reiterate this point, that the Committee, by getting into this situation early, before the certification is made, is in a position to influence the President not to certify if there is any reasonable doubt that the kinds of commitments he is getting now are as good as they sound. And that is the position that I take, that certification should not proceed without the hard evidence, and even if there is hard evidence, you still need a period to test the sincerity and the completeness of the commitments made.

Mr. ADELMAN. There is a real danger that things are getting so confused in all this. "Yes, if". "Yes, but". All this language gets very confusing. If you are a Chinese trying to figure out U.S. foreign policy and you hear these endless phrases without verbs, it sounds almost German; you wonder where the verb is—you get the idea it is very unclear what the hell is going on.

It is very simple to say the Chinese behavior has not been such to conform with any international norms or what we meant in 1985. Once theirs becomes behavior which conforms in a reasonable way, yes, then we are anxious to sell this material. Then there is no shame about it. I would be very supportive of U.S. business getting these contracts. I don't want the Russians or the French to get these contracts, I want U.S. business to.

But I also want standards of international behavior. I don't see how, without twisting yourself into a pretzel, you can say there is

conformity in this. And twisting yourself into a pretzel is very damaging. Clarity in foreign policy goes a long way.

Let me give you one example real quick. In 1981-82 the Iran-Iraq war, Iraq used chemical weapons against Iran. OK, your heart doesn't bleed because of these two combatants. But the standard of not using chemical weapons in combat should have been upheld by applying sanctions back then.

We had the power to impose sanctions on that. We were at that time cozier with Iraq than we were with Iran. The decision was made, and I participated in an NSC meeting in the Reagan Administration on this issue, that because we had so much else going with Iraq at that time we could not apply the sanctions. So let's try to explain that the chemical attacks didn't happen in the last 10 minutes or something like that. My explanation didn't make any common sense, but with a bunch of lawyers, we could do it. But, those kinds of actions signal "Well, it's OK." They are very damaging, I think.

Mr. BLUNT. You are still a no.

Mr. ADELMAN. I am a no.

Mr. BLUNT. Ms. Weeks, I want to get to you with a question. The Chinese have nuclear facilities, energy facilities now.

Ms. WEEKS. They have nuclear energy facilities and nuclear weapons, yes.

Mr. BLUNT. They have technology from France, Canada, made a recent agreement to get it from Russia. Any other countries that have provided that technology?

Ms. WEEKS. I don't believe so, no. They built one reactor themselves. I think it is a fairly small one and it was an early design. They want to build an increasing percentage of the content of all of the reactors they have planned, and that is going to be the case for whoever they buy them from. They want Chinese engineers and designers to be trained to help build these things and to build an increasing amount of the content themselves.

Mr. BLUNT. Mr. Fertel, do you want to comment?

Mr. FERTEL. I just wanted to make the observation that I think all of us on the panel, including Ambassador Gallucci when he was here earlier, made the statement that as far as what would suffice for the certification, none of us were privy to the intelligence information, the deliberations of the negotiations, et cetera. And in the last 10 or 15 minutes both Ambassador Adelman and Paul Leventhal went ahead and said they just would not certify right now based on what they know, and maybe based on what they know, they couldn't certify. I think we need to see what the President knows and what he knows from sources that none of us are privy to, and that is what the Congress should review, not what we conjecture.

Mr. BLUNT. What is the economic impact, Mr. Fertel, of establishing one nuclear reactor, getting the contract for that in the United States, in terms of dollars or jobs?

Mr. FERTEL. We looked at that based upon experience with some sales to Taiwan and other sales in South Korea and Japan, and it would look like you are in the \$1 to \$2 billion range for one reactor, and again, using rough numbers, it is maybe 15,000 man-years of work.

We see a market, just to put it in perspective, if the Chinese are going to come anywhere close to meeting their objectives, which is 50,000 megawatts by 2020, they would be ordering about 2,400 megawatts a year starting next year in order to get there. While that sounds like an enormous amount of capacity, since 1990 they have added 100,000 megawatts to their grid, so in 6 years they have added 100,000 megawatts of generating capacity.

Mr. BLUNT. I am told that General Scowcroft, Brent Scowcroft, has authored a paper on encouraging nuclear cooperation with the Chinese. Does anybody know, does he take a position in that paper on this specific issue?

Mr. ADELMAN. I don't know that. I just know that Brent Scowcroft over the last 20 years has always, in every decision over China, has always been for it, whatever it is. He is, and this is a perfectly respectable position, he is for more engagement, dialog, constructive engagement. He was with President Bush right after Tiananmen Square on the delegation to China. If I remember right, Brent himself went over to talk to the Chinese about normalizing relations very quickly and dramatically after that. And he is, like I say, in a perfectly respectable position. It is not one I support. When there is a fork in the road, he takes the fork toward China.

Mr. BLUNT. Does anybody know for sure, does he address this issue?

Mr. FERTEL. This is the study, and if it is OK with the chairman, we will enter it into the record for this particular Committee hearing.

Mr. BLUNT. Mr. Chairman, can we have that study in the record?

Mr. BEREUTER. Without objection, it will be made part of the Committee files. And the last statement of his, the Chairman's statement on General Scowcroft, may go to your question. I am not sure, but I will turn over my copy for you to look at immediately if you would like.

Mr. BLUNT. OK. Mr. Chairman, I think I am done.

Mr. BEREUTER. Thank you. We will go for one final question to Mr. Graham and we will conclude so we can release our witnesses.

Mr. GRAHAM. Thank you, Mr. Chairman. I would like to talk about reprocessing just for a second.

Mr. Leventhal, you would like to make one of the conditions for any negotiations or deals with China that they not reprocess spent fuel. Is that correct?

Mr. LEVENTHAL. That the U.S. attempt to influence China to come to that decision, that is correct.

Mr. GRAHAM. Of the nuclear nations that have domestic nuclear power plants, do the British reprocess their spent fuel?

Mr. LEVENTHAL. All of our major trading partners in Europe, Britain, France, the two major trading partners, Britain and France, and Japan, have taken a position somewhat distant from the original U.S. position on reprocessing. They do reprocess.

Mr. GRAHAM. Would it be fair to say that the norm is, among nuclear users, to reprocess spent fuel?

Mr. LEVENTHAL. No, not among nuclear users; among principal nuclear vendors, perhaps.

Mr. GRAHAM. Vendors, that is correct.

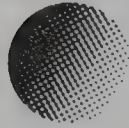
Mr. LEVENTHAL. But a growing number of countries that use nuclear energy to generate electricity are seeking to avoid reprocessing of their spent fuel, because the mock fuel they would have to use is uneconomical and raises the risks unreasonably for the utilization of atomic energy for peaceful purposes.

Mr. GRAHAM. Thank you.

Mr. BEREUTER. Ladies and gentlemen, thank you very much for your testimony today. It was very responsive, direct and helpful to us. Thank you very much. This hearing is adjourned.

[Whereupon, at 12:50 p.m., the Committee was adjourned.]

APPENDIX



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TESTIMONY OF PAUL LEVENTHAL President, Nuclear Control Institute

on

The U.S.-China Nuclear Cooperation Agreement presented to The Committee on International Relations U.S. House of Representatives October 7, 1997

Mr. Chairman and members of the Committee, I appreciate your invitation to "examine the issues with respect to implementation of the U.S.-China Nuclear Cooperation Agreement."

I am Paul Leventhal, president of the Nuclear Control Institute, a nuclear non-proliferation research and advocacy center here in Washington. Before establishing the Institute in 1981, I served on U.S. Senate staff and had responsibility for investigations and legislation leading to "fissioning" of the Atomic Energy Commission into separate regulatory and promotional agencies in 1974, and to enactment of the Nuclear Non-Proliferation Act in 1978. I also was co-director of a special, bipartisan Senate investigation of the Three Mile Island nuclear accident in 1979 and helped prepare the "lessons-learned" legislative package that Congress enacted the following year.

As you are well aware, implementation of the U.S.-China nuclear agreement has been a work in progress since 1985. Congress allowed the agreement---the product of a difficult 3 1/2 years of negotiations---technically to come into force despite some key provisions that failed to meet requirements of non-proliferation law. But Congress also attached to its Resolution of Approval a number of conditions that no President since then has been able to meet to activate the agreement, and Congress thereby blocked sales of civilian nuclear reactors and fuel to China.

In 1985, the Nuclear Control Institute opposed the agreement and supported the conditions. Our clear preference, however, was for Congress to *reject* the defective agreement by invoking authority it had to send the agreement back to President Reagan for renegotiation, or for resubmission to Congress with a waiver of statutory requirements that

Strategies for stopping the spread and reversing the growth of nuclear arms.

Paul L. Leventhal, President, Peter A. Bradford, David Cohen, Denis A. Hayes, Julian Koenig, Sharon Tanzer, Roger Richter, Dr. Theodore B. Taylor
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would have triggered an up-or-down vote on the entire agreement.¹

Today, we have grave doubts that President Clinton can meet the conditions and make the certification of China's non-proliferation credentials, as required by law. I have attached to my testimony two letters to the President, one sent by the Nuclear Control Institute and the other sent jointly by nine arms-control and non-proliferation organizations, including NCI.² These letters raise deeply troubling issues about China's proliferation record and about the risks both to U.S. supreme interests and to the global non-proliferation regime if the President permits exports of U.S. nuclear reactors and fuel to China before China demonstrates an actual halt to its proliferating ways.

My prepared testimony tracks the issues raised in these letters and concludes with some recommendations on how Congress should proceed if the President is prepared to certify China's non-proliferation commitments at this time. Our principal recommendation is that Congress enact a requirement for a waiting period of at least one year from the date of certification before China can receive nuclear goods pursuant to this agreement, and a requirement for Presidential re-certification of China each time there is an application for a major export or retransfer to China under the agreement.

I have been assisted in the preparation of the testimony I am presenting today by Daniel Horner, a senior policy analyst for NCI, and our counsel, Eldon V.C. Greenberg with the law firm of Garvey Schubert & Barer.

Overview of Key Issues

The reason Presidents Reagan, Bush and Clinton all have been unable to make the Congressionally required certification of China's non-proliferation credentials is that, since 1985, China has provided Algeria, Iran, Iraq and Pakistan with nuclear assistance applicable to the manufacture of nuclear weapons. I also have attached to my testimony a summary of these transactions and other examples of "China's Record of Proliferation Misbehavior," compiled by Steven Dolley, NCI's research director.

The question today remains the same as it was in 1985---whether a non-proliferation guarantee from the Chinese "means the same to them as it does to us," as one State Department official then expressed it to The New York Times.³

¹ For a detailed analysis of the issues at the time of consideration of the 1985 agreement, see Daniel Horner and Paul Leventhal, "The U.S.-China Nuclear Agreement: A Failure of Executive Policymaking and Congressional Oversight," Fletcher Forum, Volume 11, No. 1 (Winter 1987), pp. 105-122.

² The eight other organizations signing the letter were the British American Security Information Council, Committee to Bridge the Gap, Council for a Livable World, Institute for Science and International Security, Natural Resources Defense Council, Physicians for Social Responsibility, Henry L. Stimson Center, and Union of Concerned Scientists. The text of the letter and of the other attachments to this testimony are available from the Nuclear Control Institute's website [<http://www.nci.org/nci-usc.htm>].

³ Bernard Gwertzman, "U.S. Official Reporting Gains on a Chinese Nuclear Accord," New York Times, July 10, 1985.

The Reagan Administration, after a number of false starts at getting a clear guarantee from the Chinese leadership, finally decided it had one from then-Vice-Premier Li Peng who said, "China has no intention, either at the present or in the future, to help non-nuclear countries develop nuclear weapons."

The U.S. negotiator, Ambassador-at-Large Richard T. Kennedy, reported in testimony before this committee

Our contacts with the Chinese, Mr. Chairman, have demonstrated clearly that they appreciate the importance we attach to non-proliferation. We are satisfied that the policies they have adopted are consistent with our own basic views. Formalizing our ties in the peaceful uses of nuclear energy through an agreement for cooperation will provide a means to advance our shared objectives.⁴

But China did not stop its proliferant exports when it signed the agreement in 1985---indeed, China had contracted to provide an unsafeguarded plutonium production reactor to Algeria and had begun construction of the then-secret facility during the time China was negotiating and signing the agreement with the United States.⁵

Now the Clinton Administration appears to be preparing a similar defense of the commitments it is now receiving from the Chinese---commitments that presumably will permit the President to certify, as required by law, that "...China has provided clear and unequivocal assurances to the United States that it is not assisting and will not assist any nonnuclear weapons state, either directly or indirectly, in acquiring nuclear explosive devices or the materials and components for such devices...."⁶

The Administration is presently engaged in intense negotiations with the Chinese to nail down these commitments in the apparent hope it will be able to make activation of the nuclear trade agreement with China the centerpiece of President Clinton's first summit with President Jiang Zemin just a few weeks from now. The Administration is making a commendable effort to seize what may be the best opportunity yet, in the run-up to the summit, to persuade China to provide concrete assurances that it has stopped helping other countries to get the bomb.

One can wish that this effort will succeed and contribute to the broader objective of normalizing relations with China. But it is difficult to imagine how Chinese assurances can

⁴ Hearing and Mark-up before the Committee on Foreign Affairs, House of Representatives, Ninety-ninth Congress, First Session on H.J. Res.404, July 31; November 13, 1985.

⁵ Vipin Gupta, "Algeria's Nuclear Ambitions," International Defense Review, #4, 1992, pp. 329-330.

⁶ The law in question is the "Tiananmen Square Legislation" [Section 902 of Pub. L. No. 101-246], which incorporates the requirements of the Joint Resolution of Approval [Pub. L. No. 99-183] and imposes additional requirements. See n.9.

be squared with the CIA's recent finding that, in the second half of 1996, "China was the single most important supplier of equipment and technology for weapons of mass destruction" and also the primary nuclear supplier of Iran and Pakistan.⁷

The House International Relations Committee is to be commended for holding a hearing on this urgent issue---and for doing so while the Clinton Administration is still considering whether to make the required non-proliferation certifications to activate the 1985 agreement, rather than after the fact. Historically, U.S. non-proliferation efforts have benefitted greatly from active Congressional involvement---even if the Executive Branch has not always appreciated it.

A key problem, however, is that if U.S. nuclear trade is to proceed with China, it will do so in the context of a weak, deeply flawed agreement negotiated more than a decade ago. Specifically, the agreement

- does not contain the safeguards requirements on U.S. nuclear transfers found in all other U.S. nuclear-cooperation agreements;
- does not assert U.S. prerogatives to withhold consent for separation and use of plutonium from U.S.-supplied fuel.

Thus, the agreement fails to come to grips with the need for effective *internal* controls over transferred U.S. nuclear reactors and fuel inside China. Weak internal controls over Chinese use of U.S. low-enriched uranium (LEU) fuel might be deemed tolerable by some because LEU is not a direct-use, weapons material and because China is already a nuclear-weapon state. But the same rationale cannot be applied to plutonium obtained by China through reprocessing of irradiated, U.S.-supplied LEU fuel. This plutonium is a direct-use weapons material if diverted to China's military program. Consequently, the agreement is doubly deficient in not requiring effective safeguards, and in not asserting the U.S. right to say no to Chinese use of U.S.-origin plutonium, inside China.

In addition, the agreement does not address the need for effective *external* controls over Chinese nuclear transfers to other nations (other than establishing controls on retransfers of U.S.-origin technology and materials outside of China).

Fortunately, Congress established a means to resolve a core concern about China's nuclear export policy. China refuses to require recipients of its nuclear transfers to open their entire nuclear programs to international inspections and audits---so-called "full scope safeguards." The Congressionally mandated Presidential certification process provides an effective counter to China's policy against full-scope safeguards if the President is prepared to exercise it. Specifically, the President should not certify China's non-proliferation

⁷ CIA Nonproliferation Center, "The Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions," 1997 [hereafter "CIA Report"], p. 5. This unclassified report was mandated by Congress in Section 721 of the FY 1997 Intelligence Authorization Act.

credentials (and thereby authorize nuclear trade with China) until China agrees to require full-scope safeguards as a condition of its supplying nuclear-related items to non-nuclear weapon states.

The significance of China as the only major nuclear supplier that today does not require full-scope safeguards on all nuclear exports can be seen in Pakistan. As I elaborate later, even if China lives up to its May 1996 commitment not to supply unsafeguarded nuclear facilities, there remains the possibility of diversion of Chinese exports from safeguarded to unsafeguarded facilities in Pakistan.

Of particular concern is the possibility that China is knowingly supplying more heavy water than Pakistan needs to make up operating losses at Pakistan's safeguarded Kanupp electrical-power reactor. Such an over-supply of heavy water would establish a surplus of this essential material that Pakistan needs to start up its unsafeguarded Khushab plutonium-production reactor for its nuclear weapons program. China was the supplier of this military reactor to Pakistan and has been asked by the United States not to supply the heavy water Pakistan must have to begin operating the reactor.

However, Chinese over-supply of heavy water could provide a form of *indirect* military assistance to Pakistan, especially if inspectors from the International Atomic Energy Agency are unable, as some safeguards experts believe, to detect a diversion by Pakistan of heavy water from its safeguarded power reactor to its unsafeguarded military reactor.

It would be a serious embarrassment to the United States, and a major blow to U.S. non-proliferation leadership, if the U.S.-China agreement were activated and subsequently a Pakistani weapons-production reactor were started up through the use of Chinese-supplied heavy water. Even if the President certifies China's non-proliferation commitments at the present time, he might well find it impossible to re-certify China in the future under such circumstances.

Such abuses are possible because of China's refusal to require recipients of its exports to accept full-scope safeguards. The United States should be pressing China to join the Nuclear Suppliers Group and to require full-scope safeguards on its exports, and thereby cut off all nuclear transfers to Pakistan unless Pakistan accepts full-scope safeguards. (It should be noted that since 1995, China also has been supplying low-enriched uranium to India's U.S.-supplied Tarapur nuclear-power station without requiring full-scope safeguards⁸---an arrangement in which the United States quietly acquiesces.)

The President is not explicitly required by law to obtain a full-scope-safeguards commitment from China, but one cannot but wonder how he could certify China's non-proliferation credentials without one. China is a party to the Nuclear Non-Proliferation Treaty (NPT) and was among the parties that embraced the "principle and objective" of

⁸ Mark Hibbs, "Reported VVER-1000 Sale to India Raises NSG Concern on Safeguards," Nucleonics Week, January 12, 1995, p.13.

full-scope safeguards when the Treaty was extended indefinitely in 1995. China should now be prepared to make such a commitment. Without it, the chances of future shock from Chinese supply arrangements in Pakistan will be all the greater.

Assessing China's Current Non-Proliferation Behavior

Although China, as noted above, has engaged in nuclear trade with a number of aspiring nuclear-weapon states since 1985, it has also made some welcome progress in recent years in moving closer to global non-proliferation norms. This progress includes its ratification of the NPT in 1992, its apparent willingness to join the NPT's Zangger Committee on nuclear exports, its commitment in May of last year not to be a supplier of or to unsafeguarded nuclear facilities, its recent issuance of export-control regulations, and its possible willingness (still unconfirmed) to abandon plans to export power reactors and a uranium-conversion plant to Iran.

In each case, however, these progressive steps seemed to come in response to heavy pressure from the United States, rather than spontaneously, and in each case the commitment is less than optimal. Congress, therefore, should examine very closely whether these steps meet the requirements for Presidential certification, as stipulated by Congress in 1985 and 1990.⁹

⁹ The Joint Resolution approving the 1985 U.S.-China Agreement for Nuclear Cooperation, Pub. L. No. 99-183 (Dec. 16, 1985) requires the President to make three certifications to Congress as a precondition to the transfer or retransfer of facilities, components, and fuel to China under the U.S.-China Agreement for Nuclear Cooperation:

(A) the reciprocal arrangements made pursuant to Article 8 of the Agreement have been designed to be effective in ensuring that any nuclear material, facilities, or components provided under the Agreement shall be utilized solely for intended peaceful purposes as set forth in the Agreement;

(B) the Government of the People's Republic of China has provided additional information concerning its nuclear non-proliferation policies and that, based on this and all other information available to the United States Government, the People's Republic of China is not in violation of paragraph (2) of section 129 of the Atomic Energy Act of 1954 [which calls for a cut-off of U.S. nuclear cooperation if the President finds that a U.S. nuclear partner is assisting the nuclear-weapons program of another country]; and

(C) the obligation to consider favorably a request to carry out activities described in Article 5 (2) of the Agreement [which concerns reprocessing and other proliferation-sensitive activities] shall not prejudice the decision of the United States to approve or disapprove such a request.

The certification, and the required accompanying report on China's nonproliferation policies and practices, must lie before Congress for 30 days of continuous session.

In addition, Section 902 of the FY 1990 and 1991 Foreign Relations Authorization Act, Pub. L. No. 101-246 (Feb. 16, 1990), the "Tiananmen Square Legislation," was enacted in the wake of the violent suppression of the 1989 demonstrations in Tiananmen Square. This legislation stopped certain U.S. nuclear exports (that were outside the scope of the agreement for cooperation) that China had been receiving and stipulated that

As already noted, China's commitments to the NPT and the Zangger Committee do not include a commitment to full-scope safeguards. Further, China's commitment not to engage in unsafeguarded exports is mandatory anyway under the NPT and suggests that China violated the NPT if it transferred unsafeguarded items for nuclear use after 1992. Its new export control system also lacks a commitment to full-scope safeguards and remains to be implemented and tested. (For example, its list of controlled, non-nuclear dual use items still has to be evaluated and compared with the list used by the Nuclear Suppliers Group.) And while China may be prepared to withhold reactors and a uranium-conversion plant from Iran, the military potential of what it is still supplying Iran must be carefully evaluated. Given China's past record of violating or inadequately enforcing its nonproliferation commitments, implementation of each of these steps remains a very large question mark.

Nuclear-trade advocates argue that the President should make the certification now, even though China might not be meeting all the requirements of law, and thereby continue to "engage" China on non-proliferation matters. An ongoing commercial relationship will provide us with the leverage we need, this argument runs. But the opposite may be true. As supply contracts move forward, and the money begins to flow and build, it will be increasingly difficult for the United States to break off nuclear trade.

The certification requirements provide the United States with the only effective means for persuading China to strengthen its nuclear non-proliferation efforts. It is fair to ask whether China would be making the progress it has, or whether the Administration even would be pressing China, if Congress had not enacted the certification requirements.

By making the certification prematurely, the President could be throwing away a singular opportunity to bind China to the non-proliferation community of nations. The progress that China now is making is testament to the non-proliferation benefits of the certification requirements and an argument for Congress to maintain a strong, continuing oversight role in U.S. nuclear trade relations with China.

There is a clear danger to U.S. security interests if the President prematurely lifts the

neither they nor the exports pursuant to the agreement could be sent to China until three conditions had been met:

- (i) the President certifies to the Congress that the People's Republic of China has provided clear and unequivocal assurances to the United States that it is not assisting and will not assist any non-nuclear-weapon state, either directly or indirectly, in acquiring nuclear explosive devices or the materials and components for such devices;
- (ii) the President makes the certifications and submits the report required by Public Law 99-183; and
- (iii) the President makes a report under subsection (b) (1) or (2) of this section, relating respectively to a finding that China has "made progress on a program of political reform throughout the country, including Tibet," or to a finding that "it is in the national interest of the United States to terminate...a suspension or disapproval" of nuclear trade with China.

restrictions on nuclear trade with China. If China gets the green light to receive U.S. nuclear goods before its illicit nuclear commerce with countries such as Pakistan and Iran has ended and before its internal and external nuclear controls are put in place and shown to be effective, U.S. nuclear technology and materials could wind up in the nuclear-weapons programs of countries hostile to the United States. Sending reactors and fuel to China before outstanding proliferation questions have been resolved could have another undesirable effect---signaling to other nations that the United States is prepared to bend its own law and policy to accommodate recalcitrant nuclear trading partners.

Assessing China's New Export Control System

In May 1996---following public disclosure of China's export of 5,000 specialized ring magnets to Pakistan's unsafeguarded uranium-enrichment program---China made a commitment to the United States to halt exports to unsafeguarded nuclear installations and to develop a national system of export controls. As discussed below ("Assessing Exports to Pakistan"), it is not at all clear that China is fully complying with its pledge to stop unsafeguarded exports. As for the export-control law, China, to its credit, has adopted a new regime. But it is not publicly known how China will implement the law.

For example, the Chinese export-control system must effectively cover "dual-use" as well as nuclear-specific exports. In Senate testimony in April, Deputy Assistant Secretary of State Robert Einhorn cited this area as a particularly weak element of Chinese export-control efforts. The new law's "Nuclear Exports Control List" still must be compared with the list employed by the United States and the other members of the Nuclear Suppliers Group to determine its comprehensiveness. To be effective, the system China puts in place also must have sufficient technical and financial resources and political authority to engage in effective monitoring and real control of nuclear-related exports.

Until the President can find that China's development and implementation of such a system are effective, U.S. export prohibitions should remain in effect. Beyond the Presidential certifications required by law, the President is also required to submit to Congress "a report detailing the history and current developments in the non-proliferation policies and practices" of China. To be credible, any certification of China's cessation of assistance to other countries to acquire nuclear weapons must be backed up by a report citing clear evidence that China's establishment of an effective, enforceable export-control system, as described above, is complete and functioning well.

Assessing China's Approach to Safeguards

There are two basic concerns regarding safeguards arrangements with China. The first applies to internal controls in China to ensure that U.S. nuclear assistance is utilized solely for peaceful purposes. The second concern applies to China's refusal to require nations to which it sends nuclear-related items to accept safeguards on all their nuclear facilities---so called "full-scope safeguards."

Internal Controls: One of the certifications the President must make is that "reciprocal arrangements made pursuant to Article 8 of the Agreement have been designed

to be effective" in ensuring that U.S. exports are used only for peaceful purposes. While this article does not mandate the application of "safeguards," there is no provision that precludes a Chinese commitment to accept safeguards. There is a provision stating that "bilateral safeguards are not required," but this language does not bar a voluntary arrangement to apply them. The agreement is silent on the subject of multilateral IAEA safeguards.

There are several compelling reasons for the United States to insist on safeguards. First, in light of China's record of diverting U.S. non-nuclear exports to military applications---specifically machine tools and a supercomputer---there is a substantial basis for concern that China might violate the peaceful-use requirements for U.S. nuclear exports as well. In short, events since 1985 have only served to reinforce the arguments made at that time for requiring safeguards on U.S. nuclear exports to China.

Second, since the agreement was signed in 1985, China has joined the Nuclear Non-Proliferation Treaty (NPT) and should now be asked to embrace the NPT safeguards regime---or at least to accept comparable nuclear-materials accounting and control arrangements for facilities and fuel transferred under the U.S.-China agreement. Also, since joining the NPT, China has joined the other nuclear-weapon states in a voluntary undertaking to accept IAEA safeguards on some civilian facilities.

Third, the Nuclear Non-Proliferation Act specifically requires safeguards, without regard to whether the cooperating party is a weapon state or a non-weapon state. All other U.S. trading partners---including weapon states France and Great Britain through the U.S.-Euratom agreement---have accepted the application of safeguards on transfers of U.S. materials and equipment. Similarly, *China* has accepted the application of safeguards in its nuclear-cooperation agreements with Argentina, Brazil, Japan, and, most recently, with respect to a purchase of two reactors from Canada. Thus, the absence of safeguards arrangements in the U.S.-China agreement is anomalous.

External Controls: The other matter of concern is China's refusal to require full-scope safeguards as a condition of its nuclear-related transfers to other nations. In the declaration of "Principles and Objectives for Nuclear Non-Proliferation and Disarmament" that accompanied the indefinite extension of the NPT in 1995, all parties to the Treaty, including China, agreed on the importance of acceptance of "IAEA [International Atomic Energy Agency] full-scope safeguards and internationally legally binding commitments not to acquire nuclear weapons or other nuclear explosive devices" by non-nuclear-weapon states receiving nuclear fuel, reactors, and other major nuclear items.

The Clinton Administration should not open the door to large-scale nuclear commerce with China before China has agreed to require full-scope safeguards as a condition of supply. To do otherwise, the United States could undercut universal acceptance of full-scope safeguards and thereby devalue the overall NPT Principles and Objectives agreement. Furthermore, China would become the only U.S. nuclear trading partner among active nuclear suppliers that refuses to require full-scope safeguards for its nuclear-related exports.

China has stated it has decided to join the NPT's Zangger Committee on export controls and to adopt an identical commodity-control list ("trigger list").¹⁰ But the Zangger Committee is now preparing to conform to the Principles and Objectives agreement by embracing full-scope safeguards by the year 2000. We are concerned, therefore, that once China joins the Zangger Committee it will block consensus on the full-scope safeguards requirement---an outcome that would present a serious setback for U.S. non-proliferation policy and the NPT/IAEA safeguards regime. Indeed, a senior Western export control official recently expressed concern that "letting China into Zangger now will virtually torpedo a full-scope safeguards rule" unless China changes its position.¹¹

Further, the export-control standards of the Zangger Committee are less stringent and comprehensive than the ones accepted by the Nuclear Suppliers Group. The NSG includes the world's leading nuclear-supplier nations and all the nuclear-weapon states, except China. In addition to requiring full-scope safeguards as a condition of supply of nuclear reactors, fuel and major components, members of the Nuclear Suppliers Group also have agreed to impose export controls on an extensive list of dual-use items that could make a major contribution to the development of nuclear weapons. We believe that U.S. nuclear cooperation with China should not be implemented until China agrees to join the Nuclear Suppliers Group, or at least to adhere to its export-control standards.

Assessing Chinese Exports to Pakistan

In May 1996, after disclosure of its transfer of ring magnets to Pakistan, China pledged not to engage in further exports to unsafeguarded nuclear facilities (after refusing to require full-scope safeguards). However, there are significant indications that China has not adhered to that pledge. In response to press reports about a year ago that China had transferred a high-tech furnace and diagnostic equipment to an unsafeguarded Pakistani facility, Clinton Administration officials contended that the transfer had taken place prior to the pledge. But it remains unclear whether this particular transfer took place before or after the pledge.

Last summer the CIA reported:

During the last half of 1996, China was the most significant supplier of WMD [weapons of mass destruction]-related goods and technology to foreign countries. The Chinese provided a tremendous variety of assistance to both Iran's and Pakistan's ballistic missile programs. China also was the primary source of nuclear-related equipment and technology to Pakistan, and a key supplier to Iran during this period. Iran also obtained considerable CW [chemical-weapons]-related assistance from China in the form of production equipment and

¹⁰ "The control list is identical to the 'trigger list' of the 'Zangger Commission'....China has decided to join the Zangger Commission." Foreign Ministry spokesman Cul Tiankai, quoted in Beijing Xinhua Domestic Service, September 15, 1997 (FBIS).

¹¹ Mark Hibbs, "China to Join Zangger Committee, But Not With Full-Scope Safeguards," Nucleonics Week, October 2, 1997, p. 1.

technology. (Emphasis supplied.)¹²

Even if China is now adhering to its pledge, there is a large potential for proliferation as long as it refuses to require Pakistan, and all other nuclear customers, to accept full-scope safeguards. As long as China requires safeguards only on the particular facility receiving an export, the possibility of diversion of Chinese exports from safeguarded to unsafeguarded facilities is a real threat. For example, Pakistan could divert Chinese-supplied heavy water from the safeguarded Kanupp electrical-power reactor to the unsafeguarded Khushab plutonium-production reactor.

The situation with regard to the Kanupp and Khushab reactors is of particular proliferation significance. A shortage of heavy water is the principal obstacle to start-up of the nearly complete unsafeguarded Khushab reactor, which Pakistan has built with Chinese assistance for its military program.¹³ Authoritative reports in the McGraw-Hill Nuclear Publications¹⁴ indicate that China is supplying heavy water to the safeguarded Kanupp reactor at a rate to make up heavy-water losses of 2 to 4 percent a year. Although the Kanupp reactor had large reported losses of heavy water in its early years of operation, the facility was recently upgraded through an international assistance program intended to bring this Candu reactor into conformity with current industry operating standards---including a heavy-water loss rate of only one percent a year.

Thus, China may now be supplying Pakistan with up to nearly four metric tons more heavy water per year than it needs for its safeguarded power reactor, leaving open the possibility of diversion of surplus heavy water to Pakistan's unsafeguarded plutonium-production reactor. We understand this reactor needs only 5 tons of heavy water to start up and 15 tons to operate at full power.

Before proceeding with Presidential non-proliferation certification of China, the United States should independently establish the current heavy-water requirements for the Kanupp reactor to ensure against the supply of a diversion-prone surplus, as well as determine whether IAEA safeguards are in fact adequate to detect diversions of heavy water from a safeguarded to an unsafeguarded reactor in Pakistan. As noted above, start-up of a Pakistani weapons-production reactor through use of Chinese-supplied heavy water would be a serious embarrassment to the United States, and a major blow to U.S. non-proliferation leadership, in the wake of Presidential certifications activating the U.S.-China nuclear agreement.

¹² CIA Report, p. 5.

¹³ Mark Hibbs, "Bhutto May Finish Plutonium Reactor Without Agreement on Fissile Stocks," Nucleonics Week, October 16, 1994, p. 10.

¹⁴ Mark Hibbs, "China May Continue D2O, Reactor Exports to Pakistan After U.S. Certification," NuclearFuel, August 11, 1997, p. 1; Mark Hibbs and Abdul Rauf Siddiqui, "Khushab Reactor Said Started, But Lacks Heavy Water Supply," Nucleonics Week, June 19, 1997, p. 15; Mark Hibbs, "Incident in Pakistan Raises Questions About Source of Heavy Water Supply," Nucleonics Week, May 29, 1989, p. 8.

Our concern is prompted in part by the following response by then-Assistant Secretary Winston Lord to questions from the Senate Foreign Relations Committee in June 1996: "We have concerns about China's nuclear cooperation with Pakistan beyond the ring magnet transfer, including concerns related to both weapons development *and production of unsafeguarded nuclear materials*. We have made our concerns known to the Chinese government." (Emphasis supplied.) Any report from the Executive Branch to Congress in support of a Presidential certification should include China's response to the concerns expressed by the United States, and the current status of China's involvement in Pakistan's nuclear weapons program.

Assessing Exports to Iran

China entered into a nuclear cooperation agreement with Iran in 1985 and has been annually exporting over \$60 million worth of nuclear technology. China's exports to Iran have included a research reactor and a calutron, the latter being the same type of machine used by Saddam Hussein as the principal means of enriching uranium for Iraq's atom-bomb program.

Under intense U.S. pressure, China may now be prepared to abandon plans to supply Iran with two nuclear power reactors and a plant to convert enriched uranium from gaseous to metallic form. If true, this would be a welcome development, but China's ongoing supply arrangements with Iran must be fully assessed in view of the CIA's description of China as a "key supplier" of nuclear assistance to Iran in the latter half of 1996.

One of the certifications the President must make is that China "is not in violation of paragraph (2) of section 129 of the Atomic Energy Act of 1954." Section 129(2)(B) bars nuclear transfers to any country that is found by the President to have

assisted, encouraged, or induced any non-nuclear-weapon state to engage in activities involving source or special nuclear material and having direct significance for the manufacture or acquisition of nuclear explosive devices, and has failed to take steps which, in the President's judgment, represent sufficient progress toward terminating such assistance, encouragement, or inducement.¹⁵

Since the U.S. holds the position that Iran is embarked on a nuclear weapons program, despite Iran's non-weapons pledge as a party to the NPT, it is difficult to conceive how the President could certify China as long as China remains a key nuclear supplier to Iran. Even a commitment by China not to supply power reactors or a uranium conversion plant to Iran could not be deemed "significant progress" toward terminating weapons-related assistance under Section 129 if other significant Chinese nuclear assistance is still going to Iran. (It also should be noted that Chinese supply of nuclear-related items to Iran's nuclear weapons program would be a violation of the NPT, on which the language of Section 129 is based.) It is imperative, therefore, that China agree to terminate all significant nuclear-supply

¹⁵ 42 U.S.C. § 2158 2B.

commitments to Iran, especially since the United States now requires other countries to commit not to supply Iran, as a condition of their receiving U.S. nuclear assistance.

Assessing China's Reprocessing Plans

The failure of Article 5 of the agreement to provide, in accordance with the NNPA, the unqualified and unambiguous right of the United States to approve or deny requests for reprocessing is one of the major defects of the agreement. The provision in the agreement that "the parties undertake the obligation to consider such activities favorably" is particularly egregious. Congress sought to address the problem by including in its conditional approval of the agreement a requirement that the President certify that "the obligation to consider favorably a request to carry out activities described in Article 5(2) of the agreement shall not prejudice the decision of the United States to approve or disapprove such a request."

At the time, the Executive Branch downplayed the issue with the assertion that China had no plans to pursue reprocessing. Indeed, the agreement states

Neither party has any plans to enrich to twenty percent or greater, reprocess, or alter in form or content material transferred pursuant to this agreement or material used or produced through the use of any material or facility so transferred....In the event that a party would like at some future time to undertake such activities, the parties will promptly hold consultations to agree on a mutually acceptable arrangement.

But the issue takes on immediate significance because China is now constructing a reprocessing plant at Lanzhou and actively considering reprocessing as a source of both plutonium and highly enriched uranium.¹⁶ The fix that Congress applied in 1985 could prove inadequate to compensate for the fundamental weakness of the agreement regarding reprocessing.

The United States should seek a commitment from China to refrain from reprocessing spent fuel or utilizing recycled plutonium in its civilian nuclear power program. Obtaining such a pledge would represent an important achievement for President Clinton's 1993 Nonproliferation and Export Control Policy, which stated that the United States "does not encourage the civil use of plutonium...." and "will seek to eliminate where possible the accumulation of stockpiles of highly enriched uranium or plutonium...."

China still has not made a formal commitment to reprocess commercial spent fuel. An express Chinese commitment to a "once-through" fuel cycle would avoid future problems in implementing the U.S.-China nuclear agreement. Such a commitment also would put China in the forefront of nations opposed to use of weapons-usable nuclear

¹⁶ Mark Hibbs, "Chinese Separation Plant to Reprocess HEU Spent Fuel," NuclearFuel, January 13, 1997, p. 3.

materials in civilian nuclear programs and would establish China as a role model for nations that might otherwise be prepared to embark on reprocessing and plutonium recycle programs.¹⁷ Thus, while a Chinese commitment to forgo reprocessing and use of plutonium is not a stipulated requirement for Presidential certification to activate the agreement, it is worth pursuing given the relatively early stage of development of China's civilian program and the powerful non-proliferation precedent such a commitment would set.

In addition, the United States should engage China in discussions of its plans to reprocess and re-use highly enriched uranium (HEU) for its research-reactor program. The reprocessing plant China is constructing is intended to reprocess HEU fuel from research reactors. But China will have no clear need for recycling this weapons-usable fuel if it converts its research reactors to use low-enriched fuel unsuitable for weapons. The United States has entered into an agreement with China to help develop fuel for such conversion of research reactors operating in and supplied by China, and China is now designing its next large research reactor to use low-enriched fuel.¹⁸ A Chinese decision to reprocess HEU and continue to operate HEU-fueled research reactors would seriously undermine the 20-year international effort led by the United States to end civilian use of HEU.

Conclusions and Recommendations

At the end of July, 62 Members of the House, 36 Democrats and 26 Republicans, sent a letter to President Clinton urging that he not make the certifications that are the subject of this hearing. The letter cited China's history of supplying unsafeguarded facilities and questioned the reliability of Chinese assurances. A "senior U.S. official" was quoted in the trade press as dismissing the letter because it "looks to the past and goes over old ground."¹⁹ This official seems to be missing the point.

It is precisely because of China's record of inadequate enforcement or outright violation of its past nonproliferation commitments that there is so much uncertainty about the validity of its present commitments. In my view, there is legitimate concern that the Administration, in order to satisfy commercial interests and to meet the artificial deadline of the upcoming summit, may be prepared to activate the agreement largely on the basis of

¹⁷ China feels threatened by the military potential of the large civilian stockpiles of plutonium being accumulated by two of its neighbors, Japan and India. Thus, abstention from a domestic reprocessing program and support for a comprehensive ban on fissile materials (one that eliminates civilian as well as military stocks of weapons-usable forms of plutonium and uranium) could be seen by China as being in its own security interest. See Paul Leventhal, "The Plutonium Industry and the Consequences for a Fissile Materials Cutoff," Oxford Research Group in cooperation with the Chinese People's Association for Peace and Disarmament, Oxford University, April 28-30, 1997.

¹⁸ Shi Yongkang et al., "The China Advanced Research Reactor Project," and Yuan Luzheng et al., "Preliminary Study of Core Characteristics for the Scheduled CARR," presented at the Fifth Meeting of the Asian Symposium on Research Reactors, Taejeon, Korea, May 29-31, 1996.

¹⁹ Mark Hibbs, "Move to Block China Certification Doesn't Concern Administration," Nucleonics Week, August 7, 1997. p. 1.

Chinese promises rather than on hard evidence.

As noted earlier, the United States has been burned more than once by broken Chinese promises. China's export of a secret, unsafeguarded plutonium production reactor to Algeria at the same time China was negotiating and signing the nuclear agreement with the United States in 1985 is one remarkable example. Nor did Chinese unsafeguarded exports to Pakistan cease after China became a party to the Nuclear Non-Proliferation Treaty in 1992. As noted earlier, the recent CIA report suggests that such illicit transfers continued at least through the second half of last year.

China's record over the past 12 years shows that the skepticism Congress expressed in 1985 in the face of Executive Branch assurances was warranted. Ambassador Kennedy's assurances to the Committee in 1985, quoted earlier, should have special resonance as the Committee prepares to consider the assurances of the present Administration with regard to China's non-proliferation commitments.

The position of advocates of nuclear trade with China---that we should begin sending reactors and fuel to China knowing that we can cut off the trade if China is found to be violating the agreement---both ignores the past and oversimplifies the future. A further flaw in this pro-trade approach is that China may well be interested in acquiring only one or two reactors from the United States and then using the acquired technology as the basis for building and exporting their own.²⁰ Thus, cutting off trade at that point could be a nuclear version of "locking the barn door after the horse is stolen."

Based on China's past record and on the need to test present commitments, we recommend a different, more cautious approach. Congress should enact legislation requiring, for any nuclear-cooperation agreement subject to subsequent Presidential certification, that there be a waiting period of one year before any Nuclear Regulatory Commission license for export (pursuant to Section 126 of the Atomic Energy Act) or Department of Energy approval of transfers or retransfers (pursuant to Section 131 of the Act) could be issued under the terms of the agreement.

In addition, the legislation should require that after the one-year waiting period has elapsed and at such time as an application is made to the NRC for an export license or to DOE for approval of a transfer or retransfer, the President shall reaffirm that the original Presidential certifications that activated the underlying agreement continue to be valid and that the recipient country is not engaged in nuclear cooperation with a nation (or group of nations) determined by the President to be pursuing a nuclear weapons program. The President would submit the re-certification simultaneously to the agency involved and to the Congress. The re-certification would have to lie before Congress for review for 30 days of continuous session, and NRC or DOE could not act on the application until this period had elapsed.

Furthermore, it is appropriate for Congress and the Executive Branch, in deciding whether to engage in nuclear trade with China, to take into account Chinese exports that assist other countries in developing missiles, or chemical or biological weapons. In this

²⁰ For a recent version of this argument, see Frank Gaffney, "Nuclear Power for the U.S., not China," Washington Times, September 26, 1997, p. A17. Financial difficulties also are likely to limit China's purchases of foreign reactors; see Mark Hibbs, "Financial Growing Pains Dent China's Self-Sufficiency Bid," Nucleonics Week, October 17, 1996, p. 11.

regard, we would support a provision in the same legislation linking continued U.S. nuclear assistance to any nation (or group of nations) to that nation's (or group of nation's) compliance with international agreements restricting transfers of missiles and chemical and biological weapons technologies.

In this way, Congress would establish a statutory basis for maintaining effective oversight of the implementation of the nuclear-trade agreement with China or any agreement that requires Presidential certification to be activated. (The provision linking continued U.S. nuclear trade with compliance with missile and chemical and biological weapons agreements should apply to all nuclear trading partners of the United States.) It is essential that Congress and the Executive Branch ensure that China adheres to its commitments and especially that China follows up on its new export law by implementing a system that effectively controls exports in a manner consistent with those commitments.

It is especially important that Congress play an effective oversight role now, prior to any submission by President Clinton of the certifications required to activate the agreement with China.

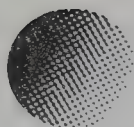
Congress should make clear, for example, that Presidential certification of China's non-proliferation credentials should include a commitment obtained from China that it will join all the other major nuclear exporters by becoming a member of the Nuclear Suppliers Group, or at least by adopting the NSG's requirement of full-scope safeguards and its agreed list of dual-use items for export control. Congress also should make clear that certification be based on a commitment from China to accept "safeguards" on its nuclear imports from the United States. U.S. law and China's record of diverting U.S.-origin, non-nuclear items to military use argue strongly for this provision.

Of course, the question of non-proliferation certification is properly seen as part of a larger debate over the future of U.S.-China relations. The solution, however, is not to accommodate bad behavior or uncertain commitments in the larger interest of constructive engagement. Any cutting of corners or abandoning of requirements of U.S. law to reach an accommodation with China on nuclear trade could, in the long run, undercut the U.S. position in other negotiations with China.

Such accommodation could threaten vital U.S. security interests, as well. Certification of China is not a question of adhering to legal niceties. Decisions on whether and when to implement the U.S.-China nuclear agreement will play a large role in determining when and if Iran acquires nuclear weapons, in my view.

For all these reasons, the President and his negotiators should be urged in the strongest terms to give national security clear priority over commercial interests' in deciding whether the required determinations can be made. Presidential certification of China should await hard evidence that China has in fact changed its proliferating ways. In any event, Congress should delay the start-up of nuclear trade with China until after a "decent interval," and then only if the President can re-certify the validity of Chinese non-proliferation commitments.

Thank you for your attention.



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BIOGRAPHY OF PAUL LEVENTHAL

Paul Leventhal founded the Nuclear Control Institute in 1981 and serves as its President after having held senior staff positions in the United States Senate on nuclear power and proliferation issues. The Institute monitors civil and military nuclear programs worldwide and pursues strategies for halting the spread and reversing the growth of nuclear armaments.

He has prepared four books for the Institute and has lectured in a number of countries on nuclear issues, including as Distinguished Visiting Fellow at Cambridge University's Global Security Programme (1991).

Mr. Leventhal organized the Institute's International Task Force on Prevention of Nuclear Terrorism, its conference in South America on averting a nuclear arms race between Argentina and Brazil, a coalition of eminent U.S. scientists and diplomats seeking a halt in further production of nuclear-weapon materials, and a working group of public-interest organizations in Washington on nuclear proliferation issues.

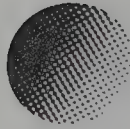
Mr. Leventhal served as Special Counsel to the Senate Government Operations Committee, 1972-1976, and as Staff Director of the Senate Nuclear Regulation Subcommittee, 1979-1981. He was responsible for the investigations and legislation that resulted in enactment of two landmark nuclear laws---the Energy Reorganization Act of 1974, replacing the Atomic Energy Commission with separate regulatory and promotional agencies, and the Nuclear Non-Proliferation Act of 1978, establishing stricter controls on U.S. nuclear exports to combat the spread of nuclear weapons. He also served as director of the Senate Special Investigation of the Three Mile Island Nuclear Accident, 1979-1980, and prepared the "lessons-learned" legislation enacted in 1980 prescribing preventive measures and emergency planning for future accidents.

Mr. Leventhal was a Research Fellow at Harvard University's Program for Science and International Affairs, 1976-1977, concentrating on nuclear weapons proliferation under a grant from the Ford Foundation. He served as Assistant Administrator for Policy and Planning at the U.S. National Oceanic and Atmospheric Administration (NOAA), 1977-1978.

Mr. Leventhal came to Washington in 1969 as Press Secretary to Senator Jacob K. Javits (R-N.Y.) after a decade of political and investigative reporting for the Cleveland Plain Dealer, New York Post and Newsday. In 1972, he served as Congressional Correspondent for National Journal before returning to Capitol Hill to pursue legislative and investigative responsibilities. He holds a bachelor's degree in government, magna cum laude, from Franklin and Marshall College. The college presented him its Alumni Medal in 1988 for distinguished professional accomplishment and contributions to society. He holds a master's degree from the Columbia University Graduate School of Journalism. He is married and has two sons.

Strategies for stopping the spread and reversing the growth of nuclear arms.

Paul L. Leventhal, *President*, Peter A. Bradford, David Cohen, Denis A. Hayes, Julian Koenig, Sharon Tanzer, Roger Richter, Dr. Theodore B. Taylor
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Issue Brief

CHINA'S RECORD OF PROLIFERATION MISBEHAVIOR

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Updated: September 29, 1997

Overview

The attitude of the People's Republic of China toward nuclear proliferation has been a national-security concern for the United States ever since China became a nuclear-weapon state in 1964. A year prior to China's first nuclear explosion, the Peking Review stated that, "[s]o long as the imperialists refuse to ban nuclear weapons, the greater the number of socialist countries possessing them, the better the guarantee of world peace."¹ Though China's current public position is that it does not support the proliferation of nuclear weapons, it did not accede to the Nuclear Non-Proliferation Treaty (NPT) until 1992. China is still not a member of the Nuclear Suppliers Group, nor is it a formal member of the Missile Technology Control Regime (though it has pledged to the United States that it will abide by MTCR guidelines).

According to a recent assessment by the Arms Control and Disarmament Agency (ACDA), China is still not fully committed to international non-proliferation regimes:

¹ Peking Review, August 16, 1963, cited in statement of Senator William Proxmire to the Senate Committee on Foreign Relations, October 9, 1985.

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BOARD OF DIRECTORS

Problems have arisen primarily in the area of nonproliferation export controls, where China has failed to adopt an effective national system and has proven reluctant to embrace completely the norms established by the multilateral regimes, i.e. the Australia Group (CBW exports), the Nuclear Suppliers Group, the Missile Technology Control Regime and the Wassenaar Agreement (conventional arms exports and related dual-use items).²

These issues are made more urgent by U.S. nuclear-industry pressure on the Clinton Administration to clear the way for expanded nuclear-technology trade with China. In order to bring into force the 1985 U.S.-China nuclear cooperation agreement, a prerequisite to such trade, the President must provide certain non-proliferation certifications to Congress. These certification requirements, enacted by Congress in the joint resolution approving but suspending implementation of the agreement,³ and further elaborated in the Tiananmen Square legislation five years later,⁴ were intended to ensure that U.S. nuclear exports to China will not commence until China has provided real assurances that it is not assisting and will not assist other nations, directly or indirectly, to acquire the means to make nuclear weapons.

What follows is a concise summary of nuclear-proliferation concerns associated with China's domestic and export programs.

China Has Not Implemented Export Controls

China promised then-Secretary of State Warren Christopher in November 1996 that it would set up an export-control system,⁵ and the Clinton Administration has stated that implementation of such a system will be required if U.S.-Chinese nuclear trade is to expand.⁶ Earlier this year, senior Administration officials expressed concern that China had failed to implement such controls. Secretary of State Madeleine Albright stated in April that "[w]e remain concerned ... about the adequacy of China's export control system. Difficulties have arisen, for example, over Chinese exports of arms as well as sensitive goods and technologies to Iran and

² ACDA, 1996 Annual Report, "Regional Arms Control: China."

³ P.L. 99-183 (December 16, 1985).

⁴ P.L. 101-246, Title IX, Sections 901 and 902 (February 16, 1990).

⁵ "Ban on Nuke Tech to China to be Partially Lifted," Dow Jones newswire, December 10, 1996.

⁶ Mark Hibbs, "Move to Block China Certification Doesn't Concern Administration," Nucleonics Week, August 7, 1997, p. 11.

Pakistan.”⁷ Samuel Berger, assistant to the President for national security affairs, echoed these concerns in June:

... China maintains weapons supply relationships that trouble us and an inadequate system of export controls to assure that in a country as large as China, unauthorized sales do not occur. Last month, we imposed economic penalties against several Chinese companies for providing assistance to Iran’s chemical weapons program. And we continue to raise with China our concerns about the possible sale of missile technology to Iran and Pakistan.⁸

In June, it was reported that implementation of these measures faced continued resistance from the Chinese nuclear industry.⁹

Late this summer, the Chinese cabinet approved a 22-article export control law, including a list of controlled items.¹⁰ However, it is not publicly known how China will implement the law. For example, the Chinese export-control system must effectively cover “dual-use” as well as nuclear-specific exports. In Senate testimony in April, Deputy Assistant Secretary of State Robert Einhorn cited this area as a particularly weak element of Chinese export-control efforts.¹¹ The new law’s “Nuclear Exports Control List” must be compared with the list employed by the United States and the other members of the Nuclear Suppliers Group to determine its comprehensiveness. To be effective, the system China puts in place also must have sufficient technical and financial resources and political authority to engage in effective monitoring and real control of nuclear-related exports.

China Has Diverted U.S. Exports to Military Use

The 1985 Congressional resolution approving the U.S.-China nuclear cooperation agreement requires, as a precondition for the agreement’s coming into force, that the President certify to Congress that, *inter alia*, verification measures are “designed to be effective” in

⁷ Madeleine Albright, speech at the U.S. Naval Academy, Annapolis, Maryland, April 15, 1997.

⁸ Samuel Berger, speech at the Council on Foreign Relations, New York, June 6, 1997.

⁹ Mark Hibbs, “Chinese Industry Resists Nuclear Export Controls,” Nucleonics Week, June 5, 1997, p. 3.

¹⁰ “China Implements Nuclear Export Licence System,” Reuters wire service story, September 15, 1997.

¹¹ Robert Einhorn, deputy assistant secretary of state for nonproliferation, testimony before the Senate Governmental Affairs Committee, Subcommittee on International Security, April 10, 1997.

ensuring peaceful uses of U.S. exports. Almost 12 years later, it is not clear whether such measures have been agreed upon.

Concerns that China might fail to keep promises not to use U.S.-origin nuclear technology for military purposes are justified by its misuse of U.S. non-nuclear exports. China has already diverted certain U.S.-origin non-nuclear "dual-use" technology to military applications. In 1994, China imported U.S. machine tools for what it claimed were civilian purposes. In fact, these tools were diverted to a missile factory. Commerce Department investigators urged sanctions, but higher level officials rejected sanctions in favor of continuing a "constructive-engagement" approach.¹²

In June 1997, Secretary of State Madeleine Albright protested China's illegal diversion of a Sun Microsystems supercomputer to a facility doing military research.¹³ In September 1997, China agreed to return the supercomputer to the United States.¹⁴

China Assists Proliferant States

A CIA report concluded that, in the second half of 1996, "China was the single most important supplier of equipment and technology for weapons of mass destruction" worldwide.¹⁵ This dubious honor reflects a pattern of Chinese export misbehavior that has continued for decades. Here is NCI's compilation of Chinese assistance provided to nations of proliferation concern.¹⁶

¹² Gary Milhollin, "China Cheats (What a Surprise!)," New York Times, April 24, 1997, p. A35.

¹³ Robert Greenberger, "Albright Says China Broke Export Rules by Using U.S. Computer at Military Site," Wall Street Journal, July 1, 1997, p. A16.

¹⁴ David Sanger, "China to Return Computer It Had Diverted to Military," New York Times, September 12, 1997, p. A10.

¹⁵ U.S. Central Intelligence Agency, Nonproliferation Center, "The Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions," 1997, p. 5. See also Mark Hibbs, "DOD, ACDA Want China Accord Link to Other Weapons Export Limits," Nucleonics Week, August 21, 1997, p. 2; Tim Weiner, "China is Top Supplier to Nations Seeking Powerful, Banned Arms," New York Times, July 3, 1997, p. A10.

¹⁶ Research for this paper was assisted by the CNS computer databases compiled by the Center for Nonproliferation Studies, Monterey Institute for International Affairs.

Algeria. In 1983, when Algeria was refusing to join the NPT, China contracted to construct a large, unsafeguarded nuclear research reactor, capable of producing significant amounts of plutonium. Construction on the reactor complex began sometime between August 1987 and May 1989---well after China's April 1984 pledge to subject all future nuclear exports to IAEA safeguards.¹⁷ China also supplied large hot cells, which can be used to handle highly radioactive spent fuel to separate plutonium.¹⁸ Only years later, after international pressure was brought to bear on both nations, was the reactor announced publicly and placed under IAEA safeguards.

Argentina. In the early 1980s, at a time when Argentina refused to join the NPT, China supplied that nation with unsafeguarded highly enriched uranium, uranium hexafluoride, and heavy water.¹⁹ China entered into a nuclear cooperation agreement with Argentina in 1985.²⁰

India. In the 1980s, China covertly sold India 130 to 150 tons of heavy water, enhancing India's ability to produce plutonium in CANDU reactors for its nuclear weapons program after Canada and the United States had cut off supply of heavy water to India.²¹ In 1994, China agreed to supply India with low-enriched uranium fuel for its Tarapur reactors, the first shipment of which arrived in early 1995.²²

Iran. China entered into a nuclear cooperation agreement with Iran in 1985.²³ In September 1995, the Chinese ambassador to Iran confirmed that China was supplying uranium enrichment and other nuclear technology to Iran.²⁴ China is Iran's most important supplier of

¹⁷ Vipin Gupta, "Algeria's Nuclear Ambitions," International Defense Review, #4, 1992, pp. 329-330.

¹⁸ Mark Hibbs, "Move to Block China Certification," op. cit.

¹⁹ Judith Miller, "U.S. is Holding Up Peking Atom Talks," New York Times, September 19, 1982; Michael Brenner, "People's Republic of China," in International Nuclear Trade and Nonproliferation, Ed. William Potter, 1990, p. 253.

²⁰ Daniel Shultz, "The PRC's Nuclear Cooperation Agreements," Eve on Supply, #4, Spring 1991, pp. 78-79.

²¹ Judith Miller, "U.S. is Holding Up Peking Atom Talks," op. cit.; Gary Milhollin and Gerard White, "A New China Syndrome: Beijing's Atomic Bazaar," Washington Post, May 12, 1991, p. C4.

²² Mark Hibbs, "Reported VVER-1000 Sale to India Raises NSG Concern on Safeguards," Nucleonics Week, January 12, 1995, p. 1.

²³ Daniel Shultz, "The PRC's Nuclear Cooperation Agreements," Eve on Supply, #4, Spring 1991, pp. 78-79.

²⁴ Martin Walker, "US Fears Beijing May Be Split Over Mending Fences," Guardian, September 25, 1995.

nuclear technology, exporting over \$60 million worth annually, and 14 Chinese nuclear experts are reportedly working at Iranian nuclear facilities.²⁵

According to one report, China recently completed construction of a plant to convert uranium from UF₆ gas to metallic form.²⁶ Such a uranium-conversion facility would be useful in a nuclear-weapons program. IAEA inspectors reported in early 1997 that the Isfahan Nuclear Technology Center, site of the plant, is "building up at a rate not justified by Iran's declared nuclear activities."²⁷ In July, Clinton Administration officials denied the plant's existence. An ACDA official stated that "[t]hat report is not accurate," and a senior State Department official said, "[t]here is no information---negative---showing such a facility in Iran."²⁸

China has also supplied Iran with a research reactor capable of producing plutonium²⁹ and a calutron, a technology that can be used to enrich uranium to weapons-grade.³⁰ (Calutrons enriched the uranium in the "Little Boy" bomb that destroyed Hiroshima, and were at the center of Saddam Hussein's effort to develop an Iraqi nuclear bomb.) In 1993 and 1994, China provided a complete nuclear fusion research reactor facility to Iran, and provided technical assistance in making it operational.³¹

²⁵ Con Coughlin, "U.S. Sounds Alarm Over Iran Nuclear Threat," Sunday Telegraph (London), February 23, 1997, p. 24.

²⁶ "EU Leaks Report on Nuclear Program," Iran Brief, July 3, 1997, p. 5.

²⁷ Mark Hibbs, "Iran Agrees to Monitoring Under 93+2, Part I Safeguards," NuclearFuel, January 13, 1997, p. 3.

²⁸ Mark Hibbs & Michael Knapik, "U.S. Aims for China Certification Timed with Fall Visit by Jiang," NuclearFuel, July 28, 1997, p. 3.

²⁹ Kenneth Timmerman, "Tehran's A-Bomb Program Shows Startling Progress," Washington Times, May 8, 1995. According to Timmerman, China and Iran did not report the 1991 purchase of this reactor to the IAEA.

³⁰ Marie Colvin, "Secret Iranian Plans for a Nuclear Bomb," Sunday Times (London), July 28, 1991; Russell Watson, "Merchants of Death," Newsweek, November 18, 1991, p. 38.

³¹ Gary Milhollin, Wisconsin Project, Testimony before the Senate Select Committee on Intelligence, September 18, 1997, p. 8.

China has contracted with Iran to construct two nuclear-power reactors near Bushehr, though it is not clear whether these plans have been put on hold.³² China also has provided Iran with nuclear-capable ballistic missiles,³³ cruise missiles,³⁴ missile components, and chemicals useful in making nerve gas.³⁵ According to the CIA, China is helping Iran to acquire the capability to manufacture medium-range ballistic missiles.³⁶ China has reportedly "sold Iran 400 tons of chemical agents, giving it the largest chemical weapons stockpile of any Third World country,"³⁷ and also sold Iran "virtually complete chemical weapon factories including precursor chemicals and glass-lined vessels."³⁸

Iraq. In 1990, after Iraq's invasion of Kuwait and the imposition of an international trade embargo, China provided Iraq with lithium hydride, a chemical compound useful in both boosted-fission and thermonuclear (hydrogen) bombs, as well as ballistic missile fuel.³⁹ China also reportedly assisted Iraq in the construction of samarium-cobalt ring magnets for uranium-

³² In August, Israeli Prime Minister Netanyahu, after meeting with Chinese Vice Premier Li Lanqing, stated that "I was told that China ... reached an important decision not to provide the means for building an atomic reactor which Iran asked China to supply." "Netanyahu Says Received China Assurances on Iran," Reuters wire story, August 24, 1997. However, the Chinese Government refused to confirm or comment on this statement. "China Silent on Whether Iran Nuclear Sale Shelved," Reuters wire story, August 26, 1997. Chinese ambiguity on its commitment to the Iran reactor project has continued for some time. "China/Iran: Reactor Plans Shelved—Again?," Nucleonics Week, January 11, 1996, p. 9.

³³ Representative Tom Lantos, "Chinese Ballistic Missile Sales," Statement before the Subcommittee on International Security, International Organizations, and Human Rights, House Foreign Affairs Committee, May 20, 1993, p. 4.

³⁴ Robert Einhorn, Senate Governmental Affairs Committee testimony, op cit

³⁵ Robert Einhorn, ibid.; Bill Gertz, "China Sold Iran Missile Technology," Washington Times, November 21, 1996, p. A1.

³⁶ Barbara Opall, "U.S. Queries China on Iran: Fears Transfer of Missile Technology," Defense News, June 19-25, 1995.

³⁷ Mark Yost, "China's Deadly Trade in the Mideast," Wall Street Journal, December 4, 1996, p. A18, citing "U.S. Navy sources."

³⁸ Milhollin, Senate Select Intelligence Committee testimony, op cit.

³⁹ Tim Kelsey, "Chinese Arms Dealers Flaunt U.N. Embargo—China Ships Vital Nuclear Cargo to Iraq," London Sunday Independent, September 30, 1990, reprinted in Congressional Record, October 18, 1990, p. H10531.

enrichment centrifuges.⁴⁰ In 1993, a Chinese corporation exported ammonium perchlorate, a missile fuel precursor, to the Iraqi government via a Jordanian purchasing agent.⁴¹

North Korea. Several hundred North Korean experts have been trained in plutonium separation and other nuclear technologies in China and the Soviet Union since the 1960s.⁴² China may also have assisted North Korea's ballistic missile program.⁴³

Pakistan. A 1997 CIA report concluded that, for the period July to December 1996---i.e. *after* China's May 11, 1996 pledge to the United States not to provide assistance to unsafeguarded nuclear facilities---China was Pakistan's "primary source of nuclear-related equipment and technology..."⁴⁴ In the early 1980s, China provided Pakistan with the design for a nuclear weapon, and probably enough highly enriched uranium (HEU) for one to two bombs.⁴⁵ It has also assisted Pakistan in construction of an unsafeguarded plutonium production reactor at Khushab,⁴⁶ and possibly a reprocessing plant at Chasma.⁴⁷ In 1986, China sold Pakistan tritium, an element used in the trigger of hydrogen bombs as well as to boost the yield of fission weapons.⁴⁸

⁴⁰ "Iraq and the Bomb," MidEast Markets, December 11, 1989, p. 130.

⁴¹ Export Control News, December 30, 1994, p. 14.

⁴² Mark Hibbs, "No U.S. Agency Consensus on DPRK Nuclear Progress," Nucleonics Week, January 6, 1994, p. 10.

⁴³ Spector et al., p. 49.

⁴⁴ CIA report, "The Acquisition of Technology Relating to Weapons of Mass Destruction," op cit., p. 5.

⁴⁵ Leslie Gelb, "Pakistan Link Perils U.S.-China Nuclear Pact," New York Times, June 22, 1984, p. A1; Leonard Spector et al., Tracking Nuclear Proliferation, Carnegie Endowment for International Peace, 1995, p. 49.

⁴⁶ Spector et al., ibid.

⁴⁷ Bill Gertz, "China Aids Pakistani Plutonium Plant," Washington Times, April 3, 1996, p. A4. More recently, however, an unnamed U.S. official stated that Pakistan "may well have gotten some equipment" for reprocessing from foreign sources, but the Chasma reprocessing facility "is an empty shell." Quoted in Mark Hibbs, "China Accord Would Turn Up U.S. Heat On Pakistani Reactor," Nucleonics Week, August 14, 1997, p. 8.

⁴⁸ Milhollin and White, p. C4.

In 1995, China exported 5,000 ring magnets to Pakistan. Such magnets are integral components of high-speed gas centrifuges of the type used by Pakistan to enrich uranium to weapons-grade.⁴⁹ In October 1996, the CIA reported that China had provided Pakistan with dual-use furnaces and diagnostic equipment.⁵⁰ It remains unclear whether these transfers took place before or after China's May 1996 pledge.

China has provided assistance with a number of Pakistan's nuclear reactors. China is constructing a safeguarded nuclear-power plant at Chasma⁵¹ and supplying it with an advanced-computer control system.⁵² China also supplies heavy water to the safeguarded Kanupp reactor (originally supplied by Canada), and has provided assistance in the construction of an unsafeguarded plutonium-production reactor near Khushab.⁵³

The situation with regard to the Kanupp and Khushab reactors is of particular proliferation significance. A shortage of heavy water is apparently the principal obstacle to start-up of the nearly completed, unsafeguarded Khushab reactor, which Pakistan built with Chinese assistance. Recent reports indicate that China is supplying heavy water to the safeguarded Kanupp reactor at a rate to make up heavy-water losses of two to four percent a year.⁵⁴ Although the Kanupp reactor had large reported losses of heavy water in its early years of operation, the facility was recently upgraded to bring the reactor into conformity with industry standards, and reduce the heavy-water loss rate to about one percent annually. Thus, China may now be supplying Pakistan with up to nearly four metric tons more heavy water per year than it needs for its safeguarded power reactor, leaving open the possibility of diversion of surplus heavy water to Khushab, which needs only five tons of heavy water to start up and 15 tons to operate at full power. These questions have yet to be resolved.

⁴⁹ Tim Weiner, "Atom Arms Parts Sold to Pakistan by China, U.S. Says," New York Times, February 8, 1996, p. A1.

⁵⁰ Mark Hibbs, "U.S.-China Cooperation Closer as China Scales Back Pakistan Aid," Nucleonics Week, October 17, 1996, p. 11.

⁵¹ Spector et al., p. 97. The plant supposedly will be subject to IAEA inspections.

⁵² "Pakistan to get Chinese Computer," Wall Street Journal, August 22, 1997, p. A10.

⁵³ Mark Hibbs, "China May Continue D2O Reactor Exports to Pakistan After U.S. Certification," NuclearFuel, August 11, 1997, p. 1.

⁵⁴ Ibid.

According to the CIA, China provided Pakistan with 30 ready-to-launch M-11 ballistic missiles, capable of delivering nuclear warheads, to Pakistan.⁵⁵ China also reportedly helped Pakistan build a missile production factory, which will be ready to operate in 1997, and U.S. intelligence reports frequent trips by Chinese missile technicians to Pakistan.⁵⁶

South Africa. In the early 1990s, when South Africa's apartheid government was not a member of the NPT and was secretly building nuclear bombs, China supplied Pretoria with 60 tons of unsafeguarded enriched uranium.⁵⁷ This enriched uranium may have enabled South Africa to triple weapons-grade uranium output at the Valindaba facility.⁵⁸

Syria. According to U.S. intelligence sources, China has provided ballistic missile technology to Syria,⁵⁹ including the nuclear-capable M-9 missile,⁶⁰ and guidance technology for M-11 missiles, in violation of the MTCR.⁶¹

⁵⁵ "India Says China has sent Missiles to Pakistan," Reuters wire story, August 7, 1997. See also Jeffrey Smith and David Ottaway, "Spy Photos Suggest China Missile Trade," Washington Post, July 3, 1995, p. A1.

⁵⁶ Gary Milhollin, "China Cheats," op. cit.

⁵⁷ Leonard Spector, Nuclear Ambitions, 1990, p. 274.

⁵⁸ Michael Brenner, "The People's Republic of China," op. cit., p. 253.

⁵⁹ Bill Gertz, "China Sold Iran Missile Technology," Washington Times, November 21, 1996, p. A1; Spector et al., p. 49.

⁶⁰ Milhollin and White, p. C4; Lantos, p. 5.

⁶¹ Mark Yost, "China's Deadly Trade," op. cit.

British American Security Information Council • Committee to Bridge the Gap •
 Council for a Livable World • Institute for Science and International Security •
 Natural Resources Defense Council • Nuclear Control Institute •
 Physicians for Social Responsibility • Henry L. Stimson Center •
 Union of Concerned Scientists

September 26, 1997

President William Jefferson Clinton
 The White House
 Washington, D.C. 20500

Dear Mr. President:

We are writing to express our concern about a number of deeply troubling issues pertaining to whether the United States should engage in civilian nuclear cooperation with China.

We understand that you are now considering making the Presidential certifications required to activate the U.S.-China Agreement for Nuclear Cooperation. To meet the certification requirements, which Congress enacted when it approved the agreement in 1985, you will need clear evidence that China is faithfully adhering to bilateral and international commitments to refrain from assisting other countries to acquire nuclear weapons. We appreciate the efforts you are now making to obtain these commitments from China.

Your upcoming summit with President Jiang Zemin and the negotiations preceding it represent the best opportunity yet to persuade China not only of the importance you assign to halting the further spread of nuclear weapons, but also of the critical role of China, as a party to the Non-Proliferation Treaty (NPT), in bringing about universal adherence to non-proliferation standards. If you submit the certifications prematurely -- thereby allowing China to receive U.S. nuclear power reactors and fuel while it is still supplying would-be nuclear-weapon states, such as Iran and Pakistan -- a singular opportunity to bind China to the non-proliferation community of nations will be lost, at great potential risk to vital U.S. security interests.

Our concerns apply to the following urgent issues:

Safeguards: With regard to China's exports, we are concerned that China still refuses to require "full-scope safeguards" as a condition of supply for its nuclear transfers to other nations. This refusal puts China at odds with the declaration of "Principles and Objectives for Nuclear Non-Proliferation and Disarmament" that accompanied the indefinite extension of the NPT in 1995. In that document all parties to the Treaty, including China, agreed on the importance of acceptance of "IAEA [International Atomic Energy Agency] full-scope safeguards and internationally binding commitments not to acquire nuclear weapons or other nuclear explosive devices" by non-nuclear-weapon states receiving nuclear fuel, reactors, and other major goods.

The guidelines of the Nuclear Suppliers Group (NSG) -- which includes every major supplier except China -- call for full-scope safeguards as a condition of supply. In addition, the NSG has agreed to common export controls on an extensive list of dual-use items that could make a major contribution to the development of nuclear weapons. We believe that U.S. nuclear cooperation with China should not proceed until China agrees to join the NSG or at least to adhere to its export-control standards.

With regard to China's imports, one of the certifications you must make to Congress is that China will utilize U.S. nuclear assistance only for peaceful purposes. But China has a record of diverting U.S. non-nuclear exports -- specifically machine tools and a computer -- to military applications. Therefore, we urge you to require true IAEA safeguards, rather than some less stringent arrangement, to be applied on U.S. exports under the agreement.

Export-Control System: In light of China's long history of violating or inadequately enforcing non-proliferation commitments, it is essential that China put into place an effective, enforceable export-control system -- one that requires any significant nuclear-related exports to be reported to and specifically approved by the central government prior to transfer from China. In this way, the Chinese government would no longer be able to plead ignorance of dangerous nuclear-related transfers, as it did in the case of the ring-magnet transfer to Pakistan.

In May 1996 -- following public disclosure of its export of 5000 specialized ring magnets to Pakistan's unsafeguarded uranium-enrichment program -- China made a commitment to the United States to develop a national system of export controls. Although China now has approved a new export-control law, it is not publicly known how China will implement the new system. We believe it would be imprudent to begin nuclear commerce with China until China's export-control system is well-understood and tested.

Exports to Pakistan and Iran: After disclosure of its transfer of ring magnets to Pakistan, China pledged not to engage in further exports to unsafeguarded nuclear facilities but refused to require full-scope safeguards. We question the verifiability of this lesser pledge and therefore are concerned about the possibility of diversion of Chinese exports from safeguarded to unsafeguarded facilities in Pakistan. Of particular concern is the possibility of a transfer of Chinese-supplied heavy water from Pakistan's safeguarded Kanupp electrical-power reactor to its unsafeguarded Khushab plutonium-production reactor, especially since the latter reactor was supplied by China and still requires a supply of heavy water in order to begin operating.

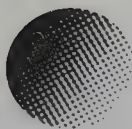
With regard to Iran, there are conflicting reports as to whether China has agreed to supply Iran with two new nuclear power reactors and a plant to convert enriched uranium from gaseous to metallic form. In our view, given the U.S. position that Iran is pursuing a nuclear-weapons program, it would not be possible for you to certify that China is not providing direct or indirect assistance to countries to develop nuclear weapons, as required by law, if China has entered into a major nuclear-supply arrangement with Iran. Furthermore, if China were assisting the nuclear-weapon programs of either Pakistan or Iran, such assistance would be in violation of China's basic NPT obligations.

Reprocessing: Although China appears to be moving toward reprocessing spent fuel and utilizing recycled plutonium in its civilian nuclear program, it has not yet made a formal commitment to do so. Obtaining a Chinese pledge to refrain from reprocessing and recycling plutonium would be a notable achievement of your 1993 policy to "not encourage the civil use of plutonium" and "seek to eliminate where possible the accumulation of stockpiles of highly enriched uranium or plutonium." While a Chinese commitment to forgo separation and use of plutonium is not a requirement for the Presidential certification, it nonetheless is important to pursue, given the early stage of development of China's civilian program and the powerful non-proliferation precedent such a commitment would set.

We appreciate your attention to these urgent matters, and we look forward to receiving your administration's response.

Sincerely,

Paul Leventhal, Nuclear Control Institute
 David Albright, Institute for Science and International Security
 Joseph Cirincione, Henry L. Stimson Center
 Daniel Hirsch, Committee to Bridge the Gap
 John Isaacs, Council for a Livable World
 Robert K. Musil, Physicians for Social Responsibility
 Christopher Paine, Natural Resources Defense Council
 Daniel Plesch, British American Security Information Council
 Tom Zamora Collina, Union of Concerned Scientists



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September 4, 1997

President William Jefferson Clinton
The White House
Washington, D.C.

Nuclear Cooperation Agreement with China

Dear Mr. President:

I am writing on behalf of Nuclear Control Institute to express our concern over a number of deeply troubling issues that have a direct bearing on the possible establishment of U.S. nuclear cooperation with China. We believe you must resolve each of these issues satisfactorily before you can submit to Congress the Presidential non-proliferation certifications needed to bring the U.S.-China Nuclear Cooperation Agreement of 1985 into force. This agreement can take effect only after current prohibitions on U.S. nuclear trade with China are lifted. These prohibitions, enacted by Congress in the joint resolution approving but suspending implementation of the agreement, and further elaborated in the Tiananmen Square legislation five years later, were intended to ensure that U.S. nuclear exports to China will not commence until China has provided real assurances that it is not assisting and will not assist other nations, directly or indirectly, to acquire the means to make nuclear weapons.

We appreciate the effort you are now making to obtain these assurances from China. Your upcoming summit with President Jiang Zemin and the negotiations preceding it present the best opportunity yet to persuade China of the importance you assign to halting the further spread of nuclear weapons and of the importance of China's full acceptance of global non-proliferation standards to making such a halt possible. On the other hand, were you to allow China access to U.S. commercial nuclear power reactors and fuel before China provides convincing evidence that it is now prepared to adhere to those global standards, a singular opportunity to bind China to the non-proliferation community of nations will be lost, at great potential risk to U.S. supreme interests if China remains a major nuclear supplier to such proliferating states as Iran and Pakistan.

Our concerns apply to the following urgent issues:

Strategies for stopping the spread and reversing the growth of nuclear arms.

Paul L. Leventhal, President, Peter A. Bradford, David Cohen, Denis A. Hayes, Julian Koenig, Sharon Tanzer, Roger Richter, Dr. Theodore B. Taylor
BOARD OF DIRECTORS

China's New Export Control System

In May 1996, China made a commitment to the United States to halt exports to unsafeguarded nuclear installations and to develop a national system of export controls, following public disclosure of its export of 5,000 specialized ring magnets to Pakistan's unsafeguarded uranium-enrichment program. According to recent press accounts, China now has approved a new export-control law, although the contents of the law have not been made public. Nor is it publicly known what China has done to implement the law.

In light of China's long history of violating or inadequately enforcing non-proliferation commitments, and of recent press accounts of the Chinese nuclear industry's strong resistance to export controls, it is not satisfactory for China to put a symbolic or superficial export-control system into place. We are concerned by a trade press report that your administration is prepared to allow U.S. nuclear exports to China to proceed once China has demonstrated simply that an export control system is in place.

To ensure that its non-proliferation pledges are now meaningful, China must actually put in place an effective, enforceable export control system---one that requires any significant nuclear-related exports to be duly noticed to and specifically approved by the central government prior to transfer from China. In this way, the Chinese government would place itself in a position of no longer being able to plead ignorance of dangerous nuclear-related transfers, as it did regarding the transfer of ring magnets to Pakistan, for example.

To be effective, the Chinese export-control system must cover "dual-use" as well as nuclear-specific exports. In Senate testimony in April, Deputy Assistant Secretary of State Robert Einhorn cited this area as a particularly weak element of Chinese export-control efforts. To be effective, the system China puts in place also must have sufficient technical and financial resources and political authority to engage in effective monitoring and real control of nuclear-related exports.

Until you can find that China's development and implementation of such a system are complete, U.S. export prohibitions should remain in effect. Beyond the Presidential certifications required by law, the President is also required to submit to Congress "a report detailing the history and current developments in the non-proliferation policies and practices" of China. We do not believe that any certification of China's cessation of assistance to other countries to acquire nuclear weapons can be credible without a report citing clear evidence that China's establishment of an effective, enforceable export-control system, as described above, is complete.

Safeguards

We have two serious concerns regarding safeguards understandings with China. The first applies to the ability of the United States to enter into safeguards or other "reciprocal arrangements" with China to ensure that U.S. nuclear assistance is utilized solely for peaceful purposes---a certification you must make to Congress to bring the agreement into force. Our second concern applies to China's refusal to require nations to which it sends nuclear-related items to accept safeguards on all their nuclear facilities---so called "full-scope safeguards."

Given China's record of diverting U.S. non-nuclear exports to military applications---specifically machine tools and a supercomputer---there is a real basis for concern that China might violate the peaceful-use requirements for U.S. nuclear exports as well. It is troubling, therefore, that China refuses to accept the application of "safeguards" *per se* on U.S. nuclear transfers, especially since U.S. agreements with other nuclear-weapon states expressly provide for the application of safeguards, and China itself has consented to the application of safeguards under nuclear agreements with Japan, Argentina and Brazil and recently in connection with its purchase of two power reactors from Canada.

While the U.S.-China agreement does not mandate the application of "safeguards," there is no provision that would preclude a Chinese commitment to the application of safeguards. Safeguards could readily be deemed to fall within the "mutually acceptable arrangements" provided for in the agreement or the "reciprocal arrangements" required by Congress for Presidential certification. Since the agreement was negotiated in 1985, China has joined the Nuclear Non-Proliferation Treaty (NPT) and should now be asked to embrace the NPT safeguards regime or at least to accept comparable nuclear materials accounting and control arrangements for facilities and fuel transferred pursuant to the U.S.-China agreement.

The other matter of concern is China's refusal to require full-scope safeguards as a condition of its nuclear transfers to other nations. In the declaration of "Principles and Objectives for Nuclear Non-Proliferation and Disarmament" that accompanied the indefinite extension of the NPT in 1995, all parties to the Treaty, including China, agreed on the importance of acceptance of "IAEA [International Atomic Energy Agency] full-scope safeguards and internationally legally binding commitments not to acquire nuclear weapons or other nuclear explosive devices" by non-nuclear-weapon states receiving nuclear fuel, reactors, and other major goods.

We are concerned, therefore, that your administration may be prepared to open the door to large-scale nuclear commerce with China before China has agreed to require full-scope safeguards as a condition of supply. Such a step by the United States could undercut this essential commitment to universal acceptance of full-scope safeguards and thereby devalue the overall NPT Principles and Objectives agreement. Furthermore, China would become the only U.S. nuclear trading partner that refuses to require full-scope safeguards for its nuclear-related exports.

We understand that China may at last be prepared to join the NPT's Zangger Committee on export controls and that the Committee is now preparing to conform to the Principles and Objectives agreement by requiring its members to embrace full-scope safeguards by the year 2000. However, we are concerned that once China joins the Committee it will block consensus on the full-scope safeguards requirement---an outcome that would present a serious setback for U.S. non-proliferation policy and the NPT/IAEA safeguards regime.

Furthermore, the export-control standards of the Zangger Committee are far less stringent than the ones accepted by the Nuclear Suppliers Group, whose membership includes the world's leading nuclear-supplier nations and all the nuclear-weapon states, except China. In addition to requiring full-scope safeguards as a condition of supply of nuclear reactors, fuel and major components, the Nuclear Suppliers Group also has agreed to common export controls on an extensive list of dual-use items that could make a major contribution to the development of

nuclear weapons. We believe that U.S. nuclear cooperation with China should not be implemented until China agrees to join the Nuclear Suppliers Group or at least to adhere to its export-control standards.

Exports to Pakistan

In May 1996, after disclosure of its transfer of ring magnets to Pakistan, China pledged not to engage in further exports to unsafeguarded nuclear facilities (after refusing to require full-scope safeguards). We are frankly concerned about the verifiability of even this lesser pledge and about the possibility of diversion of Chinese exports from safeguarded to unsafeguarded facilities in Pakistan---for example, a transfer of Chinese-supplied heavy water from the safeguarded Kanupp electrical-power reactor to the unsafeguarded Khushab plutonium-production reactor.

The situation with regard to the Kanupp and Khushab reactors is particularly troubling. We understand that a shortage of heavy water is the principal obstacle to start-up of the nearly complete unsafeguarded Khushab reactor, which Pakistan has built with Chinese assistance. Authoritative reports in the McGraw-Hill Nuclear Publications indicate that China is supplying heavy water to the safeguarded Kanupp reactor at a rate to make up heavy-water losses of 2 to 4 percent a year. Although the Kanupp reactor had large reported losses of heavy water in its early years of operation, the facility was recently upgraded through an international assistance program intended to bring this Candu reactor into conformity with current industry operating standards---including a heavy-water loss rate of only one percent a year. Thus, China may now be supplying Pakistan with up to nearly four metric tons more heavy water per year than it needs for its safeguarded power reactor, leaving open the possibility of diversion of surplus heavy water to Pakistan's unsafeguarded plutonium-production reactor. We understand this reactor may need only 5 tons of heavy water to start up and 15 tons to operate at full power.

Before proceeding with Presidential non-proliferation certification of China, your administration must independently establish the current heavy-water requirements for the Kanupp reactor to ensure against the supply of a diversion-prone surplus, as well as determine whether IAEA safeguards are in fact adequate to detect diversions of heavy water from safeguarded to unsafeguarded reactors in Pakistan. It would be a serious embarrassment to the United States, and a major blow to U.S. non-proliferation leadership, if the U.S.-China agreement were brought into force and subsequently a Pakistani weapons-production reactor were started up through the use of Chinese-supplied heavy water.

Our concern is prompted in part by the following response by then-Assistant Secretary Winston Lord to questions last year from the Senate Foreign Relations Committee: "We have concerns about China's nuclear cooperation with Pakistan beyond the ring magnet transfer, including concerns related to both weapons development *and production of unsafeguarded nuclear materials*. We have made our concerns known to the Chinese government." (Emphasis supplied.) Any report by you to Congress in support of a Presidential certification should include China's response to the concerns expressed by the United States, and the current status of China's involvement in Pakistan's nuclear weapons program.

Exports to Iran

China's past nuclear exports to Iran have included a research reactor and a calutron, the latter being the same type of machine used by Saddam Hussein as the principal means of enriching uranium for Iraq's atom-bomb program. Currently, there are conflicting reports about whether China has agreed to supply Iran with two nuclear power reactors and whether China has begun to provide Pakistan a plant to convert enriched uranium from gaseous to metallic form. In our view, given the U.S. position that Iran is embarked on a nuclear weapons program, it would not be possible for you to certify that China is not providing direct or indirect assistance to countries to develop nuclear weapons if China has entered into a major nuclear-supply arrangement of any kind with Iran.

It is imperative, therefore, that China agree to suspend all major nuclear-supply commitments to Iran, especially since the United States now requires other countries to commit not to supply Iran, as a condition of their receiving U.S. nuclear assistance.

Reprocessing

When Congress approved the proposed U.S.-China nuclear-cooperation agreement in 1985, it expressed clear reservations about a provision obligating the United States "to consider favorably" a request by China to engage in certain nuclear fuel-cycle activities, including reprocessing of U.S.-supplied nuclear fuel to extract plutonium. The Congressional resolution of approval specified that this obligation "shall not prejudice the decision of the United States to approve or disapprove such a request."

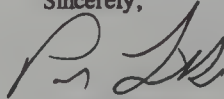
In 1993, you issued a Nonproliferation and Export Control Policy pledging that the United States "does not encourage the civil use of plutonium...." and "will seek to eliminate where possible the accumulation of stockpiles of highly enriched uranium or plutonium...." Because China has thus far made no formal commitment to reprocess spent fuel or utilize recycled plutonium in its civil power program, obtaining a Chinese pledge not to reprocess and recycle would be an important accomplishment of U.S. policy. An express commitment by China to a "once-through" nuclear fuel cycle would put it in the forefront of nations opposed to civil reliance on weapons-usable nuclear materials and also establish it as a role model for nations that might otherwise be prepared to embark on plutonium reprocessing and recycle programs. Therefore, while a Chinese commitment to forgo reprocessing and use of plutonium is not a stipulated requirement to bring the agreement into force, it is well worth pursuing given the present level of development of China's civilian program and the powerful non-proliferation precedent such a commitment would set.

In addition, the United States should engage China in discussions of its plans to reprocess and re-use highly enriched uranium (HEU) for its research-reactor program. According to press accounts, China is constructing a plant at Lanzhou to reprocess HEU fuel from research reactors, although China will have no clear need for recycling this weapons-usable fuel if it converts its research reactors to use low-enriched fuel unsuitable for weapons. By reprocessing HEU and continuing to operate HEU-fueled research reactors, China would seriously undermine the 20-year international effort led by the United States to end civilian use of HEU.

Finally, we understand from press accounts that during the ongoing negotiations with China, Deputy Assistant Secretary of State Einhorn, the lead U.S. negotiator on nuclear cooperation with China, has been in close and regular contact with high-ranking representatives of U.S. nuclear vendors. In the absence of corresponding meetings with non-proliferation and arms-control advocates who are concerned about engaging in nuclear trade with China, these extensive contacts with the nuclear industry create the perception that your administration's efforts are being driven by industry interests, to the exclusion of other interests. To dispel that impression, we request a meeting with White House and State Department officials to discuss the urgent issues outlined above.

The Nuclear Control Institute appreciates your attention to these urgent matters, and we look forward to receiving your administration's response.

Sincerely,



Paul Leventhal
President

cc:

Madeleine Albright, Secretary of State
 Samuel Berger, Assistant to the President for National Security Affairs
 William Cohen, Secretary of Defense
 Federico Peña, Secretary of Energy
 George Tenet, Director of Central Intelligence
 John Holum, Director, Arms Control and Disarmament Agency
 Senator Jesse Helms, Chairman, Committee on Foreign Relations
 Senator Joseph Biden, Ranking Minority Member, Committee on Foreign Relations
 Rep. Benjamin Gilman, Chairman, Committee on International Relations
 Rep. Lee Hamilton, Ranking Minority Member, Committee on International Relations
 Senator Strom Thurmond, Chairman, Committee on Armed Services
 Senator Carl Levin, Ranking Minority Member, Committee on Armed Services
 Rep. Floyd Spence, Chairman, Committee on National Security
 Rep. Ronald Dellums, Ranking Minority Member, Committee on National Security
 Senator Richard Shelby, Chairman, Select Committee on Intelligence
 Senator Robert Kerrey, Ranking Minority Member, Select Committee on Intelligence
 Rep. Porter Goss, Chairman, Select Committee on Intelligence
 Rep. Norman Dicks, Ranking Minority Member, Select Committee on Intelligence
 Senator Fred Thompson, Chairman, Committee on Governmental Affairs
 Senator John Glenn, Ranking Minority Member, Committee on Governmental Affairs
 Rep. Edward Markey
 Rep. Gerald Solomon

Testimony of Robert L. Gallucci
Dean of the Edmund A. Walsh School of Foreign Service
Georgetown University
Before the House Committee on International Relations
October 7, 1997

Mr. Chairman,

Thank you for giving me the opportunity to testify before the Committee on the US-China Nuclear Cooperation Agreement.

One way to put the issue today is to ask whether or not it would be in the national interest for the President to implement the 1985 Agreement for Cooperation with China by providing the necessary non-proliferation certifications specified in legislation. It seems to me that, put this way, the issue stimulates four additional questions: first, does evidence of Chinese nuclear activity support a conclusion that the standard of the legislation has been met?; second, even if the standard has been met, should the United States try to use the prospect of implementation to gain additional, desirable commitments from the Chinese in the nuclear area?; third, independent of Chinese behavior in the nuclear area, should the Administration take into account Chinese behavior in other areas of proliferation concern, such as chemical weapons and ballistic missile related exports?; and fourth, however persuasive the case might be for certification now, would it not be prudent for the Administration to wait significantly longer to be certain of Chinese intentions? Let me briefly address each of the questions.

First, the language in the legislation of 1985 and 1990 essentially calls upon the President to certify that China is not assisting any non-nuclear weapons state to acquire nuclear weapons. Indeed, he must certify that he has received from the Chinese "clear and unequivocal assurances" that they are not providing either "directly or indirectly" such assistance. The past history of reported Chinese activity raises questions about nuclear cooperation with Pakistan in the areas of uranium enrichment, unsafeguarded nuclear reactor construction, heavy water supply and nuclear weapons design. The past history of reported cooperation with Iran relates at least to nuclear reactor construction, uranium conversion and training. China supplied a third country, Algeria, with a nuclear reactor which ultimately, though not initially, came under safeguards. That history has arguably been separated from the current situation by Chinese assurances in May 1996 that it would not export to unsafeguarded nuclear facilities and that it would develop a national system of export controls. The Administration has recently said that it has no evidence that China has acted in a manner inconsistent with the May 1996 assurances.

Put simply, China's behavior would not meet the standard of the legislation of 1985 and 1990 if that behavior still included support for Pakistan's unsafeguarded facilities, or nuclear cooperation of any consequence with Iran, safeguarded or not. The matter of China's export control system is complicated by the fact that the system is currently being defined. That said, if China is to meet the legislative standard, it would seem prudent for the Administration to insist that China go beyond the current Zanger Committee standard to include so-called "dual-use" items as controlled by the Nuclear Suppliers Group.

The second question is whether or not the Administration should go beyond the legislative standard to achieve other desirable non-proliferation commitments: to insist that China require that a country put all its nuclear activities under safeguards before agreeing to an export, so-called

"full-scope safeguards" as a condition of supply; that China agree to forgo reprocessing of spent fuel to extract plutonium; and that China accept voluntary IAEA safeguards inspections on reactors provided by the United States.

All these would be desirable steps from a non-proliferation perspective. They are not, however, required by legislation nor, apparently, have they been pressed upon the Chinese as a condition for implementation of the Agreement for cooperation during past discussions of the issue. To raise the bar, to move the goal posts without a rationale other than the assertion that we have the leverage to do it, undermines the credibility of the United States. It does not contribute to the character of the relationship the United States has been trying to build with China. Moreover, on substance, it is arguable that all three are achievable, even likely, if allowed to emerge from a developing relationship with China in the nuclear area -- one in which China continues to be drawn into the international non-proliferation regime. These are reasonable objectives with the Chinese, but not appropriate pre-conditions for certification.

The third question goes to Chinese behavior bearing on the proliferation of weapons of mass destruction, other than nuclear weapons. The history of Chinese exports related to chemical weapons and ballistic missile development is cause for serious concern. This remains true notwithstanding more recent Chinese adherence to the Chemical Weapons Convention and acceptance of the Missile Technology Control Regime guidelines. The Chinese must understand that a significant breach of international norms in these areas would inevitably destroy the United States' willingness to license any nuclear exports to China. But this is not a matter that should block certification -- unless evidence of a significant breach now exists -- it is a concern to share with the Chinese now, and an area in which leverage is to be gained once implementation of the nuclear agreement begins and licenses are potentially put at risk.

Finally, there is a question as to the wisdom of rushing to implementation now when the history of Chinese misbehavior is so long, and the record of compliance with its assurances of good behavior so short. The argument for proceeding turns on the acceptance of the proposition that American nuclear exports to China would be a good outcome: good for nonproliferation and regional security, good for the national security; and good for the economy and perhaps the global environment, that is, broadly in the national interest. The Chinese track record is indeed short and, at this point, not complete. But once the evidence supports a case for certification by the standard of the legislation of 1985 and 1990, I believe it would be prudent for the President to proceed. If American companies were to take advantage of the implementation of the Agreement and sell nuclear reactors to China, they would join those in Russia, France and Canada who are already doing so. If the Chinese were subsequently found to be engaging in unacceptable behavior, licenses for export could be denied. In the meantime, the United States would have followed through on a dialogue with China long pursued, taken an important step in the slow process of engaging Beijing bilaterally and, with the rest of the international community, drawn China further into the web of legitimate relations between sovereign states.

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THE U.S.-CHINA NUCLEAR COOPERATION AGREEMENT

STATEMENT OF JENNIFER WEEKS
EXECUTIVE DIRECTOR, MANAGING THE ATOM PROJECT

House Committee on International Relations

Tuesday, October 7, 1997

Mr. Chairman and members of the Committee, I appreciate the opportunity to testify before you on the subject of U.S.-Chinese nuclear trade.

The Clinton administration clearly hopes to implement the 1985 agreement for peaceful nuclear cooperation with China, possibly announcing its intention to make the necessary certifications during the state visit of President Jiang Zemin this month. The question for Congress is whether President Clinton can make the certifications that are required under U.S. law to implement the agreement.

Briefly, these certifications are:

- That the visits and exchanges to be negotiated under Article 8 of the agreement are "designed to be effective" in ensuring that U.S. exports will be used strictly for peaceful purposes;
- That based on all information available to the U.S. government, including current assurances from Chinese leaders, China is not assisting any non-nuclear weapon state to develop nuclear weapons; and
- That the obligation in Article 5 of the agreement to consider Chinese requests to alter U.S.-origin materials "favorably" will not prejudice U.S. decisions.

The President must also submit a report to Congress on the history and current status of China's nonproliferation policies. Congress then has 30 days of continuous legislative session to review this information before the agreement can enter into force.

These certifications are required under P.L. 99-183, which Congress approved in December 1985. Because of China's past nonproliferation record, no administration to date has been able to make these certifications.

After the Tiananmen Square demonstrations in 1989, Congress passed additional legislation which suspended nuclear trade with China under the agreement for cooperation until the President certifies that China is not assisting and will not assist non-nuclear weapon states in acquiring nuclear explosive devices or materials.

As recently as mid-September, administration officials acknowledged that China had not met all of these requirements. It is an open question whether China will do so by the time of the summit, and the situation will probably not be resolved until President Jiang's visit. I would like to suggest some guiding principles for addressing this issue, followed by specific recommendations.

As guiding principles, I offer the following:

- First, China is key to U.S. nuclear nonproliferation policy in many ways: as a nuclear weapon state, as a permanent member of the U.N. Security Council, as an important supplier country, and as a major regional power in Asia. It makes sense for the United States to engage with China on this issue, and to offer positive incentives — such as peaceful nuclear trade — for China to improve its policies.
- Second, nonproliferation should be the main criterion for deciding whether to implement the agreement. There are other significant issues involved, including jobs and revenue from nuclear exports, and the need to reduce China's greenhouse gas emissions (which reflect its dependence on coal). But security should come first. The United States spends many tens of billions of dollars every year to promote its security interests in Asia. Preventing further spread of nuclear weapons in this region is more urgent than exporting nuclear reactors.
- Third, many U.S. officials have worked hard for years to improve China's nuclear nonproliferation behavior, and they have made important progress. The decision of whether and when to certify China for nuclear trade involves a delicate balancing act. On the one hand, there are some key issues on which the United States should not accept less than 100 percent cooperation from China. On the other hand, if the United States adds new conditions for certification at this point which China is unlikely to accept, we risk losing tangible commitments from China, and may jeopardize opportunities for further progress. It is important to avoid making the perfect the enemy of the good.

Specifically, what should Congress look for in evaluating a presidential certification? I believe there are five immediate issues:

- **China must terminate its supply relationships with unsafeguarded facilities in Pakistan and with Iran, and adhere to its May 1996 pledge not to make exports to any unsafeguarded nuclear facilities.** China's sales to Pakistan and Iran are its most blatant problem areas in the nuclear field, and the United States should not accept any murkiness here. China must end all direct and indirect assistance — including both equipment and personnel — to unsafeguarded facilities in Pakistan, particularly the nearly complete plutonium production reactor at Khusab. The administration is pushing China to terminate all of its supply relationships with Iran, even to safeguarded facilities, because the U.S. government believes that Iran is seeking to develop nuclear weapons. Therefore, any Chinese nuclear exports to Iran — even to facilities subject to inspection by the International Atomic Energy Agency (IAEA) — would contribute to Iran's weapons program, thus violating the Clinton administration's criteria for certification.
- **The United States should obtain tangible evidence that China's new export control system is complete enough and effective enough to work in practice.** The new

Chinese export control regulations that were announced last month focus on specialized nuclear technologies; they do not extend to “dual-use” goods, that is, items that have both commercial and military applications. The Chinese government issued a directive on dual-use exports earlier this year, but it is still developing regulations to control them. Iraq’s clandestine nuclear weapons program showed the need for effective controls on dual-use technologies that can be used to produce nuclear bombs. The administration should not certify China for nuclear trade without strong evidence that China has the intent and the capability to control both specialized and dual-use technologies that have nuclear weapons applications. When the United States assesses whether to support countries for membership in the Australia Group and the Missile Technology Control Regime, we look for patterns of behavior over time which indicate whether there have been major deviations from a country’s legal controls on chemical, biological, and missile-related exports. There is no reason to ask less from China in the nuclear area.

- **Congress should require a clear statement from the administration of China’s intentions about requiring full-scope safeguards as a condition for export, and of what the administration plans to do to move China in this direction.** China is the only major nuclear supplier country that does not currently require full-scope safeguards as a condition of supply. This step, which Chinese leaders have resisted, is not legally required for certification. However, China recently announced its intent to join the Zangger Committee, which regulates exports of nuclear fuel and equipment, and which is expected to adopt such a policy within three years. Conceivably, China could block the Zangger Committee’s move to require full-scope safeguards, since that organization makes decisions by consensus. It is also possible that once China joins the Zangger Committee, it will come under strong international pressure to adhere to the same standards as all of the other members; indeed, some countries have already raised this issue with China. Congress should press the administration to develop and pursue a clear strategy on this issue, including enlisting major supplier countries that are Zangger Committee members to help convince China that it should require full-scope safeguards.
- **Congress should ask the administration for detailed information on what verification arrangements the United States will require on nuclear exports to China.** The agreement for cooperation contains only vague language about what the United States will do to make sure that nuclear exports to China are used solely for peaceful purposes. What has the administration agreed on with China in terms of end-use checks, inspections, or other processes for verifying that this is the case? As the committee knows, China has recently diverted other U.S. exports — namely, advanced machine tools and a supercomputer — from their authorized users to military facilities. It has also resisted U.S. end-use checks on missile-related exports. How does the Clinton administration propose to avoid similar problems in monitoring nuclear exports?
- **Congress should look critically at the likely trade benefits from U.S. nuclear sales to China.** China will make big investments to meet its energy needs in the coming decades.

However, Beijing clearly wants Chinese companies to produce a growing percentage of the power plants that it plans to build. In addition, China faces difficult choices between expanding its nuclear capacity and investing in other options, such as coal, natural gas, renewables, and increased energy efficiency. It is unclear how rapidly China can safely expand nuclear power generation — especially since safety depends not only on the technology that China uses to produce power, but on training competent people to operate it. In sum, there are major export opportunities for the United States in China's energy sector, but the action is not limited to nuclear power, and U.S. energy exports to China do not hinge solely on the fate of this agreement. Many organizations are studying China's energy future, including the World Bank, the National Academy of Sciences, and Lawrence Berkeley Laboratory. I urge the committee to hold further hearings with input from these experts to examine all of the commercial, environmental, and other implications of China's energy choices.

As Congress weighs these issues, it should ask a simple question: Would the United States be certifying China now if the summit weren't taking place? And if the answer is no, which is worth more to U.S. interests in the long term: a successful summit meeting, or real progress from China on nuclear nonproliferation?

I believe that progress on nonproliferation is the right answer — but I also think there are limits on what the United States is likely to achieve in the context of this certification decision. Some experts have argued that the United States should require the Chinese to take additional steps before the President certifies China for nuclear trade. Many of these goals are important and worth pursuing, such as persuading China to require full-scope IAEA safeguards as a condition for nuclear exports; to allow the IAEA to safeguard U.S. exports to China; and to refrain from developing a civil plutonium stockpile. These are valuable goals, but if the United States makes them conditions for certification now — when they have not been part of the last twelve years' negotiations — it may lose the chance to nail down real progress with China on issues that U.S. leaders have been pursuing with Beijing for the past decade.

This tradeoff is especially complex with respect to getting China to require full-scope safeguards as a condition for exports, which should be a high-level U.S. goal in the near term. Congress can play an important part by keeping pressure on the administration to pursue it. China's commitment to join the Zangger Committee has effectively committed Beijing to make a decision on this issue within three years. Based on my discussions with administration officials and scholars who are watching this issue closely, it appears likely that China will refuse to adopt a full-scope safeguards policy now, but may agree to terminate all of its support for unsafeguarded facilities in Pakistan and its nuclear trade with Iran, as the Clinton administration is urging. If the President makes a certification under these conditions, one option for Congress would be to accept that certification (providing it meets all legal criteria), but to require that no new contracts could be approved after the year 2000 unless China adopts a full-scope safeguards export policy by that date along with the rest of the Zangger Committee. This approach would recognize China's steps to date, while putting Beijing on notice that the United States will be

looking for further progress. It also would give ammunition to the agencies within the Chinese government that support tightening China's trade controls.

Beyond the full-scope safeguards issue, if the United States moves the goalposts for certification now, we could lose some valuable opportunities to work with China on other key arms control issues. For example, China needs assistance and training to build an effective export control system. U.S. experts have held a technical working session with Chinese counterparts on this issue, and negotiations are in process on a government-to-government agreement for the United States to assist China in building up its export controls (as we are doing in Russia and the former Soviet republics). If the administration plays its cards well, it can use certification to gain information and access to China's export control system. This will help U.S. experts to assess how well those controls will work and to anticipate the most likely problem areas.

The Department of Energy and U.S. national laboratories also want to work with China on other problems, such as fissile material security and accounting, and reducing the use of highly enriched uranium in civilian reactors. Chinese officials are interested in working on these issues, but their overriding priority is to implement the nuclear trade agreement. This does not mean that we should cut corners on certification, but it does suggest that implementing the nuclear trade agreement under appropriate conditions will open the door to further bilateral cooperation that is in our national security interest. Senior experts at the DOE weapons laboratories want to pursue these opportunities because they believe it is important to help create a safeguards culture in China now, while the country is opening up to outside influences but before the totalitarian control system over nuclear materials comes undone. We are trying to do this job after the fact in the former Soviet republics — a much harder challenge.

Conclusion

In conclusion, I recommend that the Committee work closely with the administration over the next several weeks to reach agreement on the areas that are essential for certification:

- cessation of Chinese support for unsafeguarded nuclear facilities in Pakistan, and of all nuclear cooperation with Iran;
- concrete evidence that China has established working nuclear export controls, including controls on dual-use goods;
- effective measures to ensure that U.S. exports to China are used solely for peaceful purposes; and
- the other reports and certification that are legally required to implement the 1985 agreement.

If the administration fails to produce convincing documentation on any of these issues, Congress should not support implementation of the nuclear trade agreement. However, if these criteria are met, Congress should not attempt to widen the scope of the certification decision. Instead, Congress should consider additional measures — including binding legislation — that will keep

the bilateral process moving forward and set clear goals for the next phase of U.S.-Chinese nuclear arms control negotiations. Persuading China to adopt full-scope safeguards as a condition for exports should be the primary objective on this list.

I also urge the Committee to keep the big picture in mind. China has come a long way from the days when it openly supported nuclear proliferation, but it has farther to go. Beijing will need U.S. assistance to make further progress, and it is in our interest to provide that help, without minimizing our differences. It took the United States many years to persuade close allies, such as Germany and France, to take some of the same steps that we now want China to take. U.S. persistence paid off in those cases, and we should be willing to make the same investment in working with China.

Thank you, and I look forward to your questions.

JENNIFER WEEKS

Jennifer Weeks is Executive Director of the Project on Managing the Atom at the Belfer Center for Science and International Affairs of the John F. Kennedy School of Government. She oversees all day-to-day aspects of this multi-year, interdisciplinary research project on nuclear security and energy policy, including project design and planning; fund raising; outreach to policy makers, researchers, and the media; coordinating workshops, colloquia, and other project activities; and conducting research. Her research interests include U.S. nonproliferation policy; Congress and foreign affairs; and nuclear decision making in democratic societies.

Prior to joining Harvard in 1997, Weeks directed the Union of Concerned Scientists' Arms Control and International Security Program and served as UCS's principal arms control lobbyist on issues including nonproliferation, deep nuclear reductions, and multilateral peacekeeping. From 1991-94, she worked on Capitol Hill as legislative assistant for defense and foreign affairs to Rep. Jane Harman (D-CA), a member of the House National Security Committee, and as a defense analyst for the Arms Control and Foreign Policy Caucus. Weeks also has worked as a researcher at the Wisconsin Project on Nuclear Arms Control in Washington, D.C. and the Center for War, Peace, and the News Media at New York University.

Weeks received a B.A. in history from Williams College in 1983 and an M.A. in political science from the University of North Carolina at Chapel Hill in 1987. Her articles on defense and arms control issues have appeared in publications including *Newsweek*, the *Christian Science Monitor*, the *Harvard Political Review*, *Arms Control Today*, *Columbia Journalism Review*, and the *New York Times*. She serves on the executive board of Women in International Security and is a member of the Council on Foreign Relations.

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THE PROJECT ON MANAGING THE ATOM

The Project on Managing the Atom works to understand the scientific, technical, and political dimensions and consequences of past nuclear policies and to prescribe effective ways to improve these policies now and for the twenty-first century. It addresses civilian and military applications of nuclear energy, as well as issues associated with ensuring genuine democratic participation in nuclear decisions.

Managing the Atom draws on the three main academic programs at the John F. Kennedy School's Belfer Center for Science and International Affairs: Science, Technology, and Public Policy; International Security; and Environment and Natural Resources. It is designed to encourage interdisciplinary thinking about nuclear problems, and to promote continuing exchange and dialogue between researchers, policymakers, and non-governmental organizations active on these issues.

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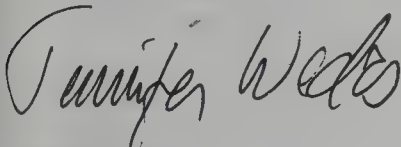
Participants in the Managing the Atom Project carry out research and analysis in three broad, interconnected policy fields:

- **The military atom:** Actions required to make current reductions in nuclear weapons arsenals permanent and irreversible; respond to new nuclear threats such as smuggling of weapon-usable materials and nuclear terrorism; and adapt U.S. nonproliferation policy to post-Cold War conditions.
- **The civilian atom:** Problems associated with the future of nuclear power, both in the United States and abroad, including market pressures; the search for a sustainable long-term waste policy; and ways to strengthen international safeguards on peaceful nuclear activities.
- **Democratic management of the atom:** Improving the performance of key agencies that make and oversee nuclear policy, increasing public input into nuclear decision making, and finding ways to develop greater public consensus around urgently needed actions in this area.

The project provides its findings and recommendations to policy makers and to the news media. It also sponsors briefings, workshops, and other collaborative activities, and supports the work of a number of pre- and post-doctoral research fellows at the Belfer Center for Science and International Affairs.

Disclosure statement:

Pursuant to clause 2(g)(4) of House rule XI, I attest that neither I nor the Project on Managing the Atom received any Federal grants or subgrants, or participated in any Federal contracts or subcontracts, during the past or current fiscal year.



Jennifer Weeks

Sino-U.S. Nuclear Cooperation at a Crossroads

Jennifer Weeks

High-level engagement with China has become a central element of the Clinton administration's foreign policy agenda. This "strategic dialogue," as officials describe it, seeks to promote China's emergence as a stable, non-aggressive state that plays a constructive role in the world community and participates in addressing a broad range of foreign policy issues, including arms control. As one step, the administration is considering implementing the bilateral nuclear cooperation agreement signed by the United States and China in 1985 and approved by Congress later that year.

Several provisions of the Sino-U.S. agreement differ significantly from other U.S. nuclear trade agreements, and were criticized when Congress considered the agreement. Opponents also argued that Beijing's non-proliferation guarantees were not credible, based on reports that China had exported unsafeguarded nuclear technology and materials to countries with clandestine nuclear weapons programs. As a result, Congress approved the agreement in a qualified form, requiring the president to make several certifications to Congress before export licenses can be issued for the transfer of major nuclear technology and materials. No administration to date has been able to do so.

Opening peaceful nuclear trade with China would further a number of the Clinton administration's foreign policy objectives. It would provide China with a positive incentive to continue tightening its nuclear non-proliferation policies and improving its export controls. Implementing the agreement would also allow U.S. companies to bid for contracts in China, one of the few strong growth markets worldwide for nuclear power. And if China takes certain steps to meet U.S. legal requirements for nuclear trade, such as joining the Zang-

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ger Committee for nuclear exports, it will become more tightly integrated into the international non-proliferation community.

However, any move to implement the Sino-U.S. agreement will raise major policy and political issues, and it could prove very difficult for the administration to win broad support. U.S. relations with China have been an issue of major contention between Congress and the executive branch since the Bush administration. Many current members of Congress are openly critical of the Clinton administration's efforts to engage China, and many view Beijing as an emerging challenger to U.S. economic and security interests. And China clearly has not yet tightened its nuclear exports sufficiently to meet the standards required under U.S. law for implementing the agreement.

If the Clinton administration acts prematurely to implement the 1985 accord, or fails to produce compelling evidence that China will adhere to its nuclear non-proliferation commitments, Congress could well reject its efforts. Such action would likely damage Sino-U.S. relations and further sour the domestic politics that surround this issue. In addition, if the administration is perceived to be downplaying concerns about China's nuclear-, chemical- and missile-related exports in order to win business

for U.S. nuclear companies, the credibility of U.S. non-proliferation policy will be undercut. In sum, given the many controversial aspects of the issue, implementation of the agreement could become one of the most significant non-proliferation debates of President Clinton's second term.

The U.S.-China Agreement

Under the 1954 Atomic Energy Act, as amended by the 1978 Nuclear Non-Proliferation Act, nuclear cooperation agreements are required before U.S. companies can export nuclear materials, technologies and services. Recipient countries must guarantee that U.S. exports will be used strictly for peaceful purposes, place transferred U.S. equipment and materials under safeguards, and maintain adequate physical security over imports and nuclear materials produced through their use. These countries must obtain prior U.S. consent to retransfer U.S.-origin technology or materials, and to reprocess or enrich U.S.-origin materials or materials produced in U.S.-supplied facilities.

The 1985 Sino-U.S. agreement, negotiated by the Reagan administration between 1981 and 1984, authorizes sales of nuclear reactors, major reactor components and low-enriched uranium (LEU) fuel (enriched to less than 20 percent uranium-235). The accord was the first U.S. nuclear trade pact with a communist country and the first bilateral agreement with another nuclear-weapon state.¹ However, critics interpreted three sections of the agreement as qualifying U.S. control over China's use of U.S. nuclear exports.

Implementation Obligations

Article 2, Section 1, which describes the scope of Sino-U.S. nuclear cooperation, includes a statement that was not contained in prior agreements:

The parties recognize, with respect to the observance of this agree-

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ment, the principle of international law that provides that a party may not invoke the provisions of its internal law as justification for its failure to perform a treaty.

This sentence raised concern that Congress might not be able to pass laws affecting issues covered by the Sino-U.S. accord after the agreement was implemented. China reportedly asked for an explicit statement addressing this point in an effort to avoid future confrontations with Washington over possible revisions to U.S. export control standards. (Such disputes arose between the United States and other nuclear trade partners after passage of the Nuclear Non-Proliferation Act in 1978.)

Reagan administration officials maintained that the provision reiterated an established principle of international law that bound the United States whether or not it was explicitly stated, and that the president could not execute an international obligation if it was barred by passage of subsequent domestic legislation. Further, they noted that the Sino-U.S. agreement established a framework for U.S. nuclear exports to China, but did not commit the United States to make any transfers. Failure to allow an export, therefore, would not be a breach of the agreement.

According to a legal memorandum prepared by the State Department, nuclear exports were "a matter of implementation, not a matter of obligation," governed by the provision in Article 2 that "Each party shall implement this agreement in accordance with its respective applicable treaties, national laws, regulations and license requirements"¹²

Prior Consent

Article 5, Section 2 addresses the issue of U.S. prior consent for reprocessing or enrichment of U.S.-supplied materials, or of materials produced using U.S.-supplied materials or facilities. Nuclear cooperation agreements typically state that the recipient country cannot undertake such activities without U.S. approval. In contrast, the Sino-U.S. agreement pledges the parties to "promptly hold consultations to agree on a mutually acceptable arrangement" if China should seek to alter U.S.-origin material. The language stipulates that "The parties undertake the obligation to consider such activities favorably," and that if Washington and Beijing cannot negotiate a long-term arrangement within six months, they will seek to negotiate measures for repro-

cessing or enrichment to proceed on an interim basis.

Opponents argued that the obligation to consider Chinese reprocessing requests "favorably" would make it nearly impossible for the United States to justify vetoing them. Because the agreement does not define what constitutes a "mutually acceptable arrangement," a "long-term arrangement," or an "interim basis," critics predicted that the vague measures prescribed for handling Chinese requests would undercut congressional review of U.S. decisions. Moreover, critics charged that approving a cooperation agreement with such loose consent requirements would undermine U.S. efforts to persuade other countries not to develop civilian plutonium stockpiles.

The Reagan administration held that China could not alter U.S.-origin materials unilaterally. In its 1985 Nuclear Proliferation Assessment Statement on the Sino-U.S. agreement, the Arms Control and Disarmament Agency (ACDA) emphasized the two-phased process for handling requests in the event China and the United States could not agree on a long-term prior consent arrangement.

During the second phase when the United States and China are seeking to make interim arrangements, the Chinese cannot undertake reprocessing, enrichment or alteration if the United States objects on grounds that such activity "would prejudice the long-term arrangements or adversely affect cooperation." Thus China cannot unilaterally proceed with reprocessing, enrichment or alteration in the face of U.S. objection.

Officials also noted that China had no plans at that time to reprocess or enrich U.S.-origin material, and that even if U.S. companies quickly won contracts, it would be a decade or longer before China produced plutonium subject to U.S. controls. In the interim, they said, the United States would monitor China's nuclear fuel cycle plans and non-proliferation policy, and its observations would form a basis for future decisions.

Verification Issues

The third controversial provision of the Sino-U.S. agreement addresses safeguards. Article 8, Section 2 declares that because both parties are nuclear-weapon

states, bilateral safeguards on transferred items are not required. It pledges the United States and China to "use diplomatic channels to establish mutually acceptable arrangements for exchanges of information and visits to material, facilities and components subject to this agreement."

Under Section 123 (a)(2) of the 1954 Atomic Energy Act, as amended, International Atomic Energy Agency (IAEA) full-scope safeguards are required on U.S. exports to non-nuclear-weapon states. However, Section 123 (a)(1), which does not distinguish between nuclear-weapon states and non-nuclear-weapon states, requires that nuclear cooperation agreements include:

[A] guaranty by the cooperating party that safeguards as set forth in the agreement for cooperation will be maintained with respect to all nuclear materials and equipment transferred pursuant thereto, and with respect to all special nuclear material used in or produced through the use of such nuclear materials and equipment

To critics, a pledge to negotiate reciprocal information exchanges and visits did not equal a full-fledged safeguards arrangement, and would not provide sufficient assurance that U.S. exports were being used solely for peaceful purposes. They noted that China had accepted reciprocal IAEA safeguards in nuclear cooperation agreements with Argentina, Brazil and Japan, and that the United States required its civilian nuclear exports to Britain and France (both nuclear-weapon states) to be subject to European Atomic Energy Community (EURATOM) safeguards.

The Reagan administration acknowledged that it had sought to persuade China to accept IAEA safeguards on U.S. exports, but that Beijing had refused on the grounds that it was a nuclear-weapon state and should be treated equally with the United States. However, administration officials testified that information exchanges and visits would be negotiated before any exports were approved.

China's Non-Proliferation Policy

Beyond these specific provisions loomed a larger question: How credible were China's non-proliferation commitments? Section 129(2)(B) of the Atomic Energy Act requires termination of U.S. nuclear exports to any country that assists non-nuclear-weapon states in developing

nuclear weapons. Many critics of the Sino-U.S. agreement argued that China did not meet this standard.

Throughout the 1960s and 1970s, Chinese leaders had openly rejected international non-proliferation norms, and China was not a party to any major non-proliferation agreement when negotiations on the bilateral nuclear accord began in 1981. Over the next four years, a series of press reports described unsafeguarded Chinese nuclear exports to countries seeking to develop nuclear weapons. Chinese transfers reported during this period included:

- Sixty tons of LEU to South Africa in 1981;
- Heavy water and LEU to Argentina; and
- Assistance with uranium enrichment and possibly a tested bomb design to Pakistan.³

As the Reagan administration sought to persuade Beijing to place its own nuclear exports and its nuclear imports from the United States under safeguards, U.S. intelligence produced a flow of information documenting Chinese unsafeguarded nuclear transfers. A classified 1983 State Department assessment of Pakistan's nuclear program bluntly stated China's role:

We have concluded that China has provided assistance to Pakistan's program to develop a nuclear weapons capability. Over the past several years, China and Pakistan have maintained contacts in the nuclear field. For some time, China's involvement was limited to operational aspects of the KANUPP power reactor at Karachi. We now believe cooperation has taken place in the area of fissile material production and possibly also nuclear device design.⁴

Nonetheless, the Reagan administration continued to pursue the nuclear cooperation agreement, which it viewed as an incentive for China to adopt stronger nuclear non-proliferation policies. In mid-1983, Beijing indicated that it would join the IAEA. In January 1984, Chinese Premier Zhao Ziyang stated, "China does not advocate or encourage proliferation. We do not engage in proliferation ourselves, nor do we help other countries develop nuclear weapons." These developments paved the way for Reagan and Zhao to initial a draft agreement in April. Zhao repeated his declaration in May to the Sixth National Peo-

ple's Congress, which endorsed the statement and published it as official policy. China also notified the United States that it would begin requiring IAEA safeguards on its nuclear exports to non-nuclear-weapon states.

But shortly after the draft was initiated, U.S. intelligence reported that Chinese scientists had been sighted at Pakistan's unsafeguarded uranium enrichment plant at Kahuta, raising suspicions that China was still helping Pakistan in this vital area. The Reagan administration had hoped to submit the agreement to Congress promptly for approval, but was forced to seek new non-proliferation guarantees from Beijing.

Chinese officials adamantly rejected this demand, which they termed insulting and an infringement on Chinese sovereignty. The closest China came to offering a public guarantee was a January 1985 statement by Vice Premier Li Peng that "China has no present or future intention to help non-nuclear-weapon states develop nuclear weapons China's present or future cooperation with other countries is confined to peaceful purposes." In June 1985, the U.S. ambassador-at-large for non-proliferation, Richard Kennedy, presented Chinese officials with a memorandum summarizing U.S.-Chinese discussions of what actions were barred by U.S. legal prohibitions against helping other countries to develop nuclear weapons. The Chinese verbally endorsed the document. Although it was not signed or incorporated into the bilateral accord, this joint statement provided sufficient assurance for the Reagan administration, which signed the agreement in July and transmitted it to Congress.

The 1985 Congressional Debate

Reagan administration officials testified to Congress that China had substantially improved its nuclear export policy and could be relied on to fulfill its non-proliferation pledges. During a House Foreign Affairs Committee hearing on the proposed agreement, ACDA Director Kenneth Adelman stated: "In the short span of two years, China has embraced non-proliferation policies and practices, which it had eschewed so vigorously for a quarter of a century. This clearly is a turnaround of historic significance in our efforts to prevent the spread of nuclear weapons."

U.S. officials projected major economic benefits from nuclear trade with China. Citing Beijing's plans to install 10,000 megawatts (electric) of nuclear generating

capacity between 1985 and 2000, they estimated the potential Chinese reactor market at \$20 billion, with U.S. companies in position to win a share worth \$3 billion to \$7 billion. The administration also predicted that winning a share of China's nuclear energy business would enhance U.S. companies' chances of penetrating China's other energy sectors.

However, the Sino-U.S. agreement drew bipartisan criticism on Capitol Hill from liberal Democrats and conservative Republicans, who predicted that the loose provisions of Articles 2, 5 and 8 would not prevent China from retransferring U.S. technology and materials to non-nuclear-weapon states. The General Accounting Office (GAO) found the accord acceptable on balance, but noted that the agreement:

. . . does contain certain vague and unclear language which could lead to misinterpretations. In several respects the language in this agreement differs from that in other nuclear cooperative agreements, but for the most part these differences appear to have more symbolic than practical effects. Nevertheless, the changes represent a departure from the longstanding U.S. practice of encouraging more stringent controls on the use of U.S. nuclear exports.⁵

The Nuclear Regulatory Commission (NRC) echoed this view during Senate Foreign Relations Committee hearings in response to questions from Senator William Proxmire (D-WI). The NRC supported the agreement but stated concern that the language in Article 2 on compliance with international agreements might reduce future U.S. flexibility. The commission also said it would have preferred that the agreement "contain a clear statement of U.S. consent rights" over Chinese reprocessing.

Congressional skeptics argued that China's non-proliferation pledges could not be trusted, especially since Beijing had refused to provide any written guarantees beyond the bilateral agreement itself. (The June 1985 memorandum that Ambassador Kennedy had persuaded Chinese leaders to approve was provided to Congress in classified form, but was not made public.) Critics further contended that approving what they viewed as an overly permissive cooperation agreement would undercut the credibility of U.S. non-proliferation policy. The strongest critics asserted that China did not meet the standards required under the Atomic Energy Act for peaceful nuclear trade, and called for the administration to

withdraw the agreement and resubmit it to Congress with a waiver of statutory requirements, thereby acknowledging that China did not meet U.S. nuclear non-proliferation criteria. (This route would have required an affirmative congressional vote for the agreement to take effect, rather than letting it automatically enter into force unless Congress passed a resolution of disapproval.) However, opponents were unable to secure majority support for this approach. Congress approved the agreement in December 1985.

As part of the legislation that authorized implementation of the accord (P.L. 99-183), Congress mandated that before any export licenses could be issued, the president had to certify to Congress that:

- The visits and exchanges to be negotiated under Article 8 were "designed to be effective" in ensuring that U.S. exports would be used strictly for peaceful purposes;
- Based on all information available to the U.S. government (including additional assurances from the Chinese government), China was not assisting any non-nuclear-weapon states to develop nuclear weapons; and
- The obligation in Article 5 to consider favorably Chinese requests to alter U.S.-origin materials would not prejudice U.S. decisions.

The resolution also required the president to submit a report on the history and current status of China's non-proliferation policies to Congress, and allowed 30 days of continuous legislative session to review this information before the agreement could enter into force.

Developments Since 1985

U.S.-Chinese nuclear trade remained in limbo for the next several years, due to growing U.S. concern over China's nuclear- and missile-related exports. Most significantly, Beijing continued to support Pakistan's nuclear weapons program despite its non-proliferation pledges. In addition, China sold CSS-2 intermediate-range ballistic missiles to Saudi Arabia and began marketing M-series missiles to Iran and Syria.

After Beijing's violent suppression of pro-democracy demonstrators in Tiananmen Square in June 1989, President Bush imposed sanctions on China, including suspension of arms sales and military-to-military

contacts. Congress subsequently wrote these and additional sanctions into law, including a ban on U.S. nuclear exports to China (P.L. 101-246). Subsequently, U.S.-Chinese nuclear relations were subsumed in a broader debate between President Bush and Congress over China's most-favored-nation (MFN) trading status. Under the Jackson-Vanik Amendment to the Trade Act of 1974, MFN status can be granted to a "non-market economy" (communist country) only if the president certifies yearly to Congress that that nation does not restrict emigration. From 1990 through 1992, however, members of Congress who viewed the Bush administration as too deferential toward China passed annual bills conditioning extension of MFN status on presidential certifications that China had made "overall significant progress" on trade, human rights and weapons proliferation issues. Bush vetoed these bills and pressed for engagement with Beijing as the best way to achieve reforms, but mustered scant political support.

China's post-Tiananmen Square exports provoked further controversy. Notably, in November 1989, China announced that it planned to sell a 300-megawatt (electric) nuclear reactor to Pakistan. Although Chinese leaders pledged to require safeguards on the reactor, this action broke an international moratorium on major nuclear sales to Pakistan. In the spring of 1991, U.S. intelligence discovered that China was supplying a research reactor to Algeria, which then was not a member of the nuclear Non-Proliferation Treaty (NPT). Later that year, the Bush administration imposed sanctions on China for selling components for nuclear-capable M-11 ballistic missiles to Pakistan. Nonetheless, U.S. diplomatic pressure arguably produced some results. In March 1992, Beijing signed the NPT and agreed to adhere to the guidelines of the Missile Technology Control Regime (MTCR). In response to the latter step, the Bush administration waived the 1991 missile sanctions and other high-technology export restrictions imposed after Tiananmen Square.

After strongly criticizing the Bush administration's China policy as too lenient during the 1992 presidential campaign, Clinton initiated a review of U.S. China policy upon entering office. In a May 1993 executive order, Clinton delinked China's MFN status from trade and arms control considerations, conditioning it solely on Beijing's human rights record. (Clinton later severed this link as well.) With this step, existing U.S. laws and international agreements once again became the venue

for addressing proliferation concerns in U.S.-Chinese relations.

Throughout Clinton's first term, the United States and China swung between cooperation and confrontation over arms control issues. On the positive side, China signed the Chemical Weapons Convention in 1993; agreed to adhere to revised MTCR guidelines and endorsed the negotiation of a treaty banning production of fissile material for weapons in 1994; supported unconditional extension of the NPT in 1995; and stopped testing nuclear weapons and signed the Comprehensive Test Ban Treaty in 1996. China also played a positive role in promoting the 1994 U.S.-North Korea agreement under which Pyongyang agreed to freeze and eventually eliminate its nuclear weapons program.

On the other hand, China continued to make controversial exports, often in contravention of its non-proliferation commitments. The Clinton administration imposed sanctions on various Chinese agencies, firms and front companies in 1993 for missile technology transfers to Pakistan and in 1995 for sales of chemical weapon precursors to Iran. In 1996, it threatened to impose sanctions for China's export of custom-built ring magnets (a component of gas centrifuges used to enrich uranium) to Pakistan. However, the administration concluded that there was insufficient evidence to determine that Chinese officials had known about or approved the transfer. Critics called this decision an overly narrow reading of U.S. law, and argued that the sale violated China's NPT commitments not to help other countries develop nuclear weapons or to transfer such items outside of international safeguards.

Today, further improvement in China's export control system and adherence to international non-proliferation norms are central issues in U.S.-Chinese relations. U.S. officials categorize China's non-proliferation record as mixed; they stress the degree to which Chinese policies have improved over the past five years, especially in the nuclear area, while acknowledging continued concerns about Beijing's export policies. Chinese transfers to Iran and Pakistan are of particular concern.

China has suspended a planned sale to Iran of two 300-megawatt (electric) nuclear reactors, which were to be placed under safeguards but which the United States argued would support Iran's nuclear weapons ambitions. U.S. officials remain strongly concerned about Chinese conventional arms sales and missile technology exports to Iran. In May 1997, the Clinton

administration imposed sanctions on seven Chinese entities for exporting dual-use items with chemical weapons applications to Iran.

With respect to Pakistan, China agreed in October 1994 that transfers of M-11 missiles were barred under MTCR guidelines. However, according to subsequent press reports citing U.S. intelligence officials, China continued to transfer M-11 technology and is helping Pakistan to build a factory that will manufacture M-11s or a similar missile. China also is reportedly helping Pakistan to build a plutonium production reactor outside of safeguards, a potential violation of Beijing's NPT commitments.⁶

It is important to note that from China's perspective, international arms control regimes often impose major costs on Beijing and are invoked selectively by Western countries, especially the United States. Chinese leaders frequently contend that they are accused of violating imprecise standards which they were not involved in negotiating. Moreover, they accuse the United States of flouting its own arms control commitments—most significantly, by selling advanced conventional weapons to Taiwan. An analysis of Chinese perspectives on arms control compliance issues is beyond the scope of this article, but two points bear emphasis. First, China has deeply held concerns about issues such as sovereignty that rightly or wrongly shape its behavior in relation to arms control treaties and agreements. Second, China's views of what it can legitimately be asked to do to fulfill its non-proliferation commitments are an important constraint on U.S. negotiators. At some point, Chinese leaders could simply refuse to take all of the steps that the Clinton administration sees as necessary to enable it to ask Congress to allow the nuclear cooperation agreement to be fully implemented.

Engaging Through Nuclear Trade

Notwithstanding these controversies, the Clinton administration appears optimistic that China will improve its non-proliferation record sufficiently in the near future to allow implementation of the 1985 nuclear accord. U.S. officials involved in this issue give several reasons for the administration's interest in implementing the agreement.

First, China wants access to U.S. nuclear technology to help meet its rapidly growing electricity needs. Currently, China operates three nuclear plants that generate

a total of 2,467 megawatts (electric). In 1996, China's three reactors supplied less than 2 percent of the country's total electricity needs. Last year Beijing announced plans to add 20 gigawatts of new capacity by the year 2010, a tenfold increase. The Sino-U.S. nuclear agreement thus offers a positive incentive for China to improve its nuclear non-proliferation credentials.

Second, implementing the 1985 nuclear accord exemplifies the Clinton

time that it addresses problematic issues such as human rights, intellectual piracy and weapons proliferation.

Not only is China a "big emerging market," energy is a "big emerging sector" in China, according to the Commerce Department, which predicts that China will spend as much as \$65 billion between 1995 and 2000 on energy and power projects, including eight nuclear plants. One nuclear industry estimate suggests that U.S. com-

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administration's broader strategy of expanding areas of U.S.-Chinese cooperation at the same time that it addresses areas of contention. According to Gary Samore, National Security Council senior director, "We are trying to demonstrate that the U.S. and China can produce concrete results in areas that have been contentious." Administration officials present U.S. policy toward China on non-proliferation issues as a mix of cooperation, high-level diplomatic engagement and targeted sanctions, aimed at integrating China into the international order rather than isolating it.

Third, the administration views China as indispensable to international efforts to control the proliferation of weapons of mass destruction by virtue of its status as a nuclear-weapon state, its standing as a permanent member of the UN Security Council, its role as a major nuclear supplier and its diplomatic influence. U.S. officials emphasize the importance of persuading China that it shares a common interest with other world powers in curbing the spread of weapons of mass destruction.

Finally, expanding peaceful nuclear trade with China promotes a major element of the Clinton administration's international economic strategy. China is the biggest of the so-called "big emerging markets," a concept developed during Clinton's first term to describe 10 countries and regions whose high-growth-rate economic plans make them the largest potential markets for U.S. exports in the coming decades. The administration's strategy calls for sustained U.S. commercial diplomacy and engagement with these countries, and asserts that the United States can pursue these emerging trade opportunities at the same

panies could earn as much as \$55 billion from the Chinese market over the next 30 years.⁷

Prospects for Implementation

U.S. officials are reluctant to predict how soon the administration may attempt to implement the Sino-U.S. nuclear agreement. President Clinton and Chinese President Jiang Zemin have agreed to conduct reciprocal state visits in 1997 and 1998, with Zemin scheduled to arrive in Washington in late October. These meetings may lend momentum to U.S. implementation efforts so that the full implementation of the nuclear accord can be celebrated at the summit level. China has indicated that it expects the Washington summit to yield "concrete results," and the 1985 agreement will no doubt be high on the agenda. During a joint news conference with Secretary of State Madeleine Albright in Kuala Lumpur, Malaysia, in late July, Chinese Foreign Minister Qian Qichen said "early implementation" of the agreement would benefit both countries. "On this matter," he said, "the two sides have held positive and productive consultations and made some progress." Nevertheless, the timing will depend on Chinese actions and on how Congress evaluates the case for nuclear cooperation.

Given the Sino-U.S. agreement's lack of explicit safeguards over U.S. exports, congressional skeptics will look closely at how the administration plans to verify that China is using U.S.-supplied technologies and materials for peaceful purposes. This issue has caused problems recently be-

tween the United States and China. In 1995, the GAO reported that the United States could not ensure that U.S. missile technology-related exports to China were being kept away from sensitive end-users, in part because the Chinese government resisted U.S. end-use checks.⁸ In 1995 and 1997, respectively, China diverted advanced machine tools and a supercomputer from their authorized users to military facilities.⁹

Congress can also be expected to scrutinize China's relationships with proliferant countries such as Pakistan and Iran. Administration officials assert that China is living up to its most recent pledge—made in the context of the May 1996 ring magnet controversy—not to provide assistance to unsafeguarded nuclear facilities. Testifying before a subcommittee of the Senate Governmental Affairs Committee in April, Deputy Assistant Secretary of State Robert Einhorn said, "While we have raised concerns with Beijing about certain activities and incidents, we have no basis to conclude that China has acted inconsistently with its May commitment."

However, the administration is not speaking with one voice on this question. In a June 1997 report on the spread of technologies related to weapons of mass destruction, the CIA stated that China was "the primary source of nuclear-related equipment and technology to Pakistan, and a key supplier to Iran during [the second half of 1996]." Overall, the report termed China "the most significant supplier of [weapons of mass destruction]-related goods and technology to foreign countries," including "a tremendous variety of assistance to both Iran's and Pakistan's ballistic missile programs" and exports of chemical weapons production equipment and technology to Iran.¹⁰

In order for Sino-U.S. nuclear cooperation to go forward, President Clinton must certify not only that China is committed to its non-assistance pledge, but that it can enforce it. Currently, China is just developing an export control system. According to Einhorn, while the Chinese government appears to have centralized procedures for controlling specialized technologies for weapons of mass destruction:

... dual-use items in the nuclear, chemical, biological and missile areas ... are not necessarily controlled by centralized or senior-level review and approval mechanisms. Indeed, we have considerable evidence that decisions to export potentially sensitive dual-use nuclear, chemical and missile items are often taken by Chi-

nese manufacturing or exporting entities—even government-owned or government-operated entities—without referral to central or high-level authorities.¹¹

An analysis of Chinese export controls by the University of Georgia's Center for International Trade and Security scores China's current system at 50 on a scale of 1 to 100. (The score indicates the status of elements that typically make up an effective export control system, but does not measure that system's effectiveness.) In comparison, the center scores Japan's export controls at 97, Russia at 82 and Kazakhstan at 69. According to this assessment, the most problematic aspects of China's export control system are relatively low levels of verification, both in China and in recipient countries; Chinese officials' reluctance to share information with foreign observers and businesses and with Chinese non-proliferation experts; and little evidence that licensing and enforcement personnel are trained to execute non-proliferation export controls. The report points out that there is great potential for cooperation between China and other governments to address some of these gaps.¹²

U.S. officials note that China is developing nuclear export control regulations that will establish a legal and regulatory basis for carrying out its non-proliferation commitment. At the conclusion of a meeting of the Executive Committee of the State Council August 1, a draft regulation on the control of nuclear exports was reportedly approved, indicating China's interest in the early implementation of the 1985 agreement. In addition to putting these controls in place, the Clinton administration is urging China to take the following steps:

- Continuing to uphold its May 1996 commitment not to help other countries develop nuclear weapons, and amplifying on that commitment. (During his March 1997 trip to Beijing, Vice President Al Gore was reportedly unable to persuade Chinese leaders to make additional assurances)¹³;
- Joining the Zangger Committee, through which nuclear supplier countries coordinate their export procedures and standards (China attended the May 1997 Zangger Committee meeting as an observer, and is actively considering joining the committee, according to U.S. officials); and

- Curtailing its nuclear trade with Iran, in response to the current U.S. policy not to carry on nuclear cooperation with countries that conduct nuclear commerce with Iran.

Significant progress on these issues would clearly benefit Chinese and U.S. interests, and would further China's evolution from a holdout to a supporter of arms control. However, a congressional debate over nuclear trade with China could still prove extremely difficult, and potentially even harmful to Sino-U.S. relations. Clearly, the administration must resolve any internal conflicts over China's compliance with its non-proliferation commitments, such as the contrasting statements cited above on Beijing's current relationship with Pakistan. Congress will not overlook such differing assessments, nor should it.

More broadly, the administration should take the domestic politics of this issue very seriously. Proliferation and China are highly charged issues on Capitol Hill, and legislators will bring up other policy questions when they review the Sino-U.S. nuclear accord. China's missile and chemical exports will certainly be considered. Administration officials assert that they are handling those issues through appropriate channels, but Congress is unlikely to draw fine distinctions between China's nuclear, missile and chemical sales as it assesses China's arms control commitments, especially since the report to Congress on China's non-proliferation record required under the 1985 legislation is not limited to nuclear issues.

Many members of Congress see China as an increasingly assertive power in Asia that is expanding its military reach. For example, some interpreted the 1995 remark by a Chinese official (in the context of the United States defending Taiwan in a conflict between Taiwan and China) that Washington would not sacrifice Los Angeles to defend Taipei as an overt threat. This year, Congress has passed measures requiring the U.S. intelligence community to track Chinese espionage activities against U.S. citizens and establishing a new center for analysis of China at the National Defense University. Members of Congress who see China in this light as an aggressive military power may argue that U.S. exports could be used to enhance China's nuclear arsenal, or that China might use U.S.-origin plutonium for weapons. These concerns are debatable because China has already produced several hundred weapons and a stockpile of weapons-grade plutonium, but they may well come up nonetheless during

congressional consideration of the nuclear accord.

The recent debate over renewing China's MFN status offers some signs of how Congress might treat a proposal to implement the 1985 cooperation agreement. While efforts to deny MFN were defeated relatively easily (by a vote of 259-173 in the House), many legislators expressed concern over China's arms control record and frustration with U.S. handling of this issue. For example, Representative Howard Berman (D-CA) said:

... what I want is for this administration to scream as loudly about the proliferation of weapons of mass destruction as it has about the manufacturing of counterfeit CDs and stolen computer software and video games. I want this administration to threaten the import controls and higher tariffs on key products imported here from China as forcefully and effectively as it has waved and wielded that weapon to remedy violations of intellectual property agreements.¹⁴

Many congressional advocates of a tough policy toward China are looking for a better forum than the MFN-trade-status debate to voice their concerns. In the wake of this year's vote, a number of bills have been introduced that address other aspects of Sino-U.S. relations, including proposals to deny visas to Chinese officials responsible for illicit arms sales and to withhold MFN treatment from products of commercial suppliers operated by Chinese military companies.

If the administration cannot satisfy critics of its overall China policy, the 1985 nuclear cooperation agreement will become a vehicle for Congress to address its trade and security concerns. Opponents probably cannot muster a two-thirds majority of both houses of Congress for a resolution of disapproval, but they might repeat the 1985 scenario by passing legislation that would impose further conditions on nuclear cooperation with China. Congress could link implementation of the accord with progress on other issues, such as missile and chemical exports, or bar the use of any U.S. funds for activities in support of nuclear exports to China, such as trade promotion. Congress might also require certifications from China in a form that Chinese leaders are certain to reject.

A likely best-case scenario for the administration would be for Congress to let the 1985 agreement be fully implemented, but to put its concerns on record (possibly

through a non-binding resolution) and require additional subsequent reports from the administration on China's compliance with its nuclear non-proliferation pledges. The Clinton administration will need to hold extensive consultations with Congress if it hopes to win certification while avoiding legislation that invokes other issues on the U.S.-Chinese agenda.

One potential administration strategy may be to make some kind of partial certification that would allow U.S. companies to negotiate with China for nuclear contracts, although they would have to wait for full certification to proceed with exports.¹⁵ This approach could allow the administration to reward China for some improvements, while demonstrating to Congress that it will not accept less than full Chinese adherence to the standards required to implement nuclear trade.

Using peaceful nuclear cooperation as an incentive to improve China's non-proliferation behavior makes sense in many respects, but it is far from guaranteed to succeed. China has greatly improved its arms control policies over the past decade, but major non-proliferation concerns persist. The Clinton administration will bear a heavy burden of proof in certifying that China meets the conditions for implementing the 1985 nuclear cooperation agreement. And given the high level of political feeling surrounding issues related to China and proliferation in Congress, the administration should consider very carefully whether the potential economic benefits of nuclear trade with China will outweigh the political costs and possible collateral damage to Sino-U.S. relations.

Gaining access to the Chinese market clearly would benefit U.S. nuclear companies, but its impact on the U.S. trade deficit with China should not be exaggerated. Nuclear power will only meet a fraction of China's energy requirements in the next several decades, and other avenues such as natural gas and renewable energy sources also offer major export opportunities. Non-proliferation, not trade, should be the determining factor in the administration's calculus of whether and when to implement the 1985 agreement. In light of the many controversies between the United States and China since 1985, and of repeated U.S. failures to extract leakproof commitments from China in this area, close congressional review is appropriate and justified.

Most importantly, nuclear trade should not be implemented unless and until every problematic aspect of China's nuclear non-proliferation behavior is resolved

to U.S. satisfaction. China is moving toward full adherence to international non-proliferation regimes, but a premature certification effort by the Clinton administration will convey the impression that the United States is bending its non-proliferation standards. Today, U.S. leaders have an opportunity to achieve major new nuclear arms control commitments from China. Now is precisely the wrong time to settle for less. ACT

NOTES

1. U.S. nuclear trade with Britain and France is regulated through a nuclear cooperation agreement negotiated with the European Atomic Energy Community (EURATOM), of which they are members.

2. Legal Memorandum prepared by the Department of State, in United States-People's Republic of China Nuclear Agreement, hearing, Senate Foreign Relations Committee, October 9, 1985, p. 159.

3. Summarized in Leonard S. Spector, *Nuclear Ambitions*, Boulder, CO: Westview Press, 1990, pp. 38-39, 42-43 and 274.

4. U.S. Department of State, "The Pakistani Nuclear Program," June 23, 1983, SECRET/NOFORN/ORCON, released under the Freedom of Information Act to the National Security Archive, January 17, 1991.

5. General Accounting Office, *Nuclear Agreement: Cooperation Between the United States and the People's Republic of China*, NSIAD-86-218R, November 1985.

6. Leonard S. Spector, et al., *Tracking Nuclear Proliferation*, Washington, DC: Carnegie Endowment for International Peace, 1995, pp. 97-99.

7. *Nucleonics Week*, March 23, 1995, p. 2.

8. General Accounting Office, *Export Controls: Some Controls Over Missile-Related Technology Exports to China are Too Weak*, NSIAD-95-82, April 1995.

9. General Accounting Office, *Export Controls: Sensitive Machine Tool Exports to China*, NSIAD-97-4, November 1996; and "Albright Says China Broke Export Rules by Using U.S. Computer at Military Site," *Wall Street Journal*, July 1, 1997.

10. Director of Central Intelligence, "The Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, July-December 1996," June 1997.

11. Testimony before the Subcommittee on International Security, Proliferation, and Federal Service, Senate Governmental Affairs Committee, April 10, 1997.

12. Richard T. Cupitt and Yuzo Murayama, *Export Controls in the People's Republic of China: Status Report—1997*, University of Georgia, 1997.

13. *Programme for Promoting Nuclear Non-Proliferation Newsbrief*, Number 38, p. 6.

14. Congressional Record, June 24, 1997.

15. Joshua Michael Boehm and Zachary S. Davis, "The U.S.-China Agreement for Nuclear Cooperation: Moving Towards Implementation?" Congressional Research Service, April 10, 1997.

Statement for the Record

Marvin S. Fertel

**Vice President - Nuclear Infrastructure Support and International Programs
Nuclear Energy Institute**

**U.S. House of Representatives
Committee on International Relations**

October 7, 1997

Mr. Chairman, members of the committee, my name is Marvin S. Fertel. I am vice president for Nuclear Infrastructure Support and International Programs at the Nuclear Energy Institute. The Nuclear Energy Institute is the policy-setting organization for the U.S. Nuclear Industry. The Institute has more than 275 companies and organizations worldwide as members, including every U.S. electric utility that operates nuclear power plants and their suppliers, engineering and construction firms, nuclear fuel cycle companies, suppliers of radionuclides and radiopharmaceuticals, consulting firms, labor unions and law firms.

I want to begin by expressing my gratitude to you, Mr. Chairman, to Ranking Member Hamilton and to the other members of this committee, for considering this important issue and the benefits that the United States and the world can accrue from commercial nuclear cooperation between the United States and China. I appreciate the opportunity to address these challenges and opportunities from the nuclear energy industry's perspective.

Foremost, when considering a global market for nuclear technology, it is in every country's best interest that the United States implement a strong nuclear nonproliferation relationship with China. An important first step in forging that relationship is negotiating and implementing an agreement for peaceful nuclear cooperation between the United States and China. This agreement provides a framework within which both trade and non-proliferation initiatives can evolve and succeed. China's commitment toward nuclear non-proliferation and the prospect of peaceful nuclear cooperation already has helped persuade China to join the Nuclear Non-Proliferation Treaty, sign the Comprehensive Test Ban Treaty, cooperate in international efforts to eliminate North Korea's nuclear program and has announced actions related to satisfying the Congressional requirement necessary to

complete the 1985 agreement. If the President certifies that China has met congressional conditions for implementing the peaceful nuclear cooperation agreement, it would be in the best interest of the United States—and the world—for the United States to participate in the Chinese commercial nuclear energy program.

Improvements in China's nonproliferation policies over the past decade have brought the prospects for nuclear cooperation closer than ever, and the United States is negotiating with the Chinese government to fulfill the conditions outlined by Congress to permit peaceful nuclear cooperation between the two countries.

The United States has been a world leader in commercial nuclear technology since President Eisenhower's Atoms for Peace program that provided the underpinning of the peaceful application of nuclear technology worldwide. America's nuclear energy program—provides 20 percent of our nation's electricity today and has met more than 40 percent of new electricity demand in the past 25 years. Clearly, the U.S. nuclear program has the most operating experience in the world, and U.S. reactor technology is the most reliable and safest in the world. U.S. technology has been the model for the global use of nuclear energy.

Within the construct of the strategic importance of the U.S.-China relationship, and with full cognizance and commitment to nuclear nonproliferation legal requirements and policy goals, there are significant benefits to the United States and the world from opening trade with China on

civilian nuclear technology, services and materials. Those benefits include:

- ▶ Assuring that China has the safest nuclear program possible by providing them with access to U.S. commercial nuclear technology and U.S. nuclear energy expertise.
- ▶ Achieving nuclear nonproliferation goals which are enhanced if the United States and China are actively engaged in civilian nuclear commerce;
- ▶ Greenhouse gases and other atmospheric emissions will be reduced in China—and in the global environment—due to a successful Chinese nuclear energy program; and
- ▶ U.S. employment, the U.S. economy and the current balance of trade with China will benefit significantly as a result of commercial nuclear trade between the two nations.

U.S. Trade Would Provide China with Safer, More Efficient and Reliable Nuclear Technology

China has three nuclear plants operating today with a total installed capacity of 2,100 megawatts. Two of China's nuclear power plants are 900-megawatt, French-designed units; the other a 300-megawatt plant designed and built by the Chinese.

China is already planning to build, or is currently building, 4,650 megawatts of new nuclear generating capacity. These plants are of French, Canadian and Chinese designs. China also has indicated its intent to purchase two large nuclear units from Russia. Moreover, China has an ambitious program

to expand its nuclear energy program, including plans announced recently to add 20,000 megawatts of new nuclear capacity to the grid by 2010, and a total of 50,000 megawatts of new nuclear energy by 2020—the equivalent of two new reactor orders each year.

So the relevant question is not whether China should develop a nuclear energy program. That question already has been answered. The remaining question is whether the United States, which has developed the most advanced and highly standardized reactor technology in the world, should be the only nation in the world that excludes itself from access to the China market.

The U.S. nuclear energy program is by far the largest nuclear program in the world. Electric utilities operate more than 100 reactors with a generating capacity of about 102,000 megawatts—making nuclear energy our second largest source of electricity (20 percent) after coal (52 percent).

Building upon the industry's extensive experience in operating nuclear power plants, electric utilities and nuclear suppliers working together—with support from the U.S. Department of Energy—have developed standardized, advanced light water reactors that are designed to be safer, more reliable and more efficient than any other existing technology. Earlier this year, two of these designs were certified by the Nuclear Regulatory Commission (NRC), and a third design should be receiving final design approval from the NRC next year.

Current U.S. and new U.S. advanced reactor designs represent the best options for the growing Chinese nuclear program. We believe the most effective way to develop a rapidly growing nuclear program, like that planned by the Chinese, is to use a limited number of standardized reactor designs.

This is a model originally developed by the French nuclear program, and one that the U.S. nuclear industry will use as it looks toward future electricity needs. From this perspective, the United States should encourage the Chinese to select a few specific reactor designs and to build “families” of plants using standardized designs as their program moves forward. This approach facilitates effective and efficient engineering, procurement, training, operations and maintenance, and quality assurance programs among the reactor sites. Importantly, a standardized approach more readily facilitates the establishment of an effective regime for regulating a rapidly growing nuclear program.

Clearly, U.S. advanced light water reactor designs represent the best available technology for a standardized nuclear energy program. The safety of the Chinese nuclear energy program will depend, in part, on the use of standardized reactor designs. In those cases where every plant is unique, reactor engineers, regulators and operators must learn different systems, with different features, raising the risk that the complexity of reactor types could increase the likelihood of errors in operation of the plants. This is particularly true in the case of a very rapidly growing program, such as the Chinese are implementing. Given China’s impetus to move toward “families” of standardized reactors, unless U.S. reactor technology is integrated into the Chinese nuclear energy program soon, the window of opportunity for providing our technology as the foundation for their standardized plants will close.

Commercial Nuclear Trade Enhances U.S. NonProliferation Goals

Opening commercial trade between China and U.S. reactor manufacturers will enhance achievements in U.S. and global nonproliferation goals. China wants the opportunity to purchase U.S. reactor designs because of their

quality, safety and the role that opening commercial nuclear trade will play in continuing to improve U.S.-China relations in nuclear matters. Removing current restrictions against civilian nuclear commerce with China requires the President to provide Congress with a number of certifications related to how well China is satisfying nonproliferation requirements. We are pleased that demonstrated progress is being made by the Chinese in establishing an export control regime and resolving other related nonproliferation issues with the U.S. government. Once the Chinese have satisfied the certification conditions imposed by the Congress, we believe that fully implementing the agreement for cooperation between the United States and China will contribute to both reinforcement of the existing Chinese nuclear nonproliferation infrastructure, and strengthen that infrastructure through future commercial interaction.

The U.S. nuclear industry is fully committed to ensuring the integrity and effectiveness of the worldwide nuclear nonproliferation regime. Clearly, without an effective nonproliferation regime, the benefits that the uses of peaceful nuclear technology provide society—electricity production, medical diagnosis and treatment, agricultural enhancement, industrial applications, and basic research—will be curtailed or lost.

We believe that the current improvements to China's nuclear nonproliferation system are a direct result of the desire of China to have access to U.S. commercial nuclear technology, and to increase competition among potential suppliers. As the nuclear industries in China and the United States begin to work together as partners to further develop the Chinese nuclear energy program, we believe the transfer of operating experience and nuclear safety and safeguard cultures will strengthen the nuclear nonproliferation regime in China.

Nuclear Energy Provides Clean Air Benefits To China

Commercial nuclear technology in China will play a critical role in protecting the environment as that country embarks on a program to develop 500,000 megawatts of electrical generating capacity by 2010, more than double its current electric generating plant capacity. Four percent of that supply, or 20,000 megawatts, is expected to be generated by nuclear energy plants. Nuclear energy will be particularly important to serve major coastal metropolitan centers that are located far from China's vast coal resources, and that already are experiencing poor air quality.

Although the Chinese will generate a portion of their electricity from hydroelectric facilities, they are the world's largest user of coal, and will expand their heavy reliance on indigenous coal supplies for electricity. This expanded dependence on coal will carry obvious environmental consequences in terms of greenhouse gases and other emissions. In fact, China is projected to be the largest emitter of greenhouse gases in the world by 2015.

Nuclear energy plays an important role in avoiding greenhouse gases. Nuclear energy produces no greenhouse gases, such as carbon dioxide, nor any sulfur oxide or nitrogen oxides because nuclear power plants do not burn fossil fuels. Generating 1 million kilowatt-hours of electricity—enough to serve 65,000 homes—using coal produces 230 metric tons of carbon dioxide. Generating the same amount of electricity using oil emits 190 metric tons of carbon and 150 metric tons of carbon using natural gas. Producing 1 million kilowatt-hours of electricity at a nuclear power plant emits no carbon dioxide.

Earlier this year, the Worldwatch Institute issued a report on fossil fuel use and carbon emissions. The group reported that China today accounts for

14 percent of total global emissions of carbon, and that these emissions increased by 27 percent between 1990 and 1996. Clearly, the growth in China's emissions of carbon dioxide, SO₂ and NO_x will increase as its electricity system grows. These emissions can be reduced, in part, by the increased development of nuclear energy, hydroelectric and other renewable energy sources and conservation and efficiency initiatives.

We believe that the safety and the reliability aspects of U.S. technology provide the greatest certainty that nuclear energy in China will fulfill its role in reducing greenhouse gas and other atmospheric emissions. One has to only examine the importance of nuclear energy toward avoiding carbon dioxide emissions in the United States:

- ▶ Nuclear-generated electricity avoids the emission of carbon dioxide and accounted for 89 percent of the reduction in carbon dioxide emissions from the U.S. electric utility industry between 1973 and 1996.
- ▶ U.S. nuclear plants reduced total U.S. carbon dioxide emissions by more than 147 million metric tons of carbon in 1996. Without nuclear energy, U.S. electric utility annual emissions of carbon dioxide would have been approximately 30 percent higher.

Clearly, nuclear energy has been a major factor in reducing carbon dioxide emissions in the United States, and it can play an important role in emissions reductions in China.

Trade with China Would Add Thousands of U.S. Jobs, Millions of Dollars in Exports

China represents the largest electricity market in the world, and the export dollars created by reactor orders are substantial. For example, two new French-designed nuclear power plants being built at Ling Ao are worth \$2.7 billion to Framatone. A Canadian nuclear plant order at Qinshan is worth approximately \$3 billion.

Exporting nuclear power plants and related services involves thousands of U.S. jobs and billions of dollars in export value. For every American 1,000 megawatt nuclear unit, we can expect between \$1 billion and \$2 billion in exports from the United States. Considering conventional Department of Commerce conversion ratios, this translates into between 15,000 and 30,000 U.S. jobs. These jobs fall in the professional, higher salary classification and in specific manufacturing and equipment product areas.

China is moving forward swiftly with its commercial nuclear program, and these jobs and export dollars will be won or lost over the next few years. In addition to the initial export opportunities, significant jobs and export opportunities are available to provide ongoing plant support services, fuel and other broader program services for countries using U.S. technology. Potential exports to China between now and 2010 just for new plants can be as much as \$15 billion, creating about 225,000 job years of work. Clearly, the United States can and should capitalize on this opportunity. Clearly, the economy of our competitors from France, Canada, and even Russia are already benefiting from sales of nuclear technology to China.

Conclusion

Cooperation between the United States and China on commercial nuclear technology cannot and should not proceed until the President has concluded that China has fully met the conditions for certification established by Congress to implement the 1985 agreement for peaceful nuclear cooperation and has submitted those certifications and associated reports to the Congress.

Once the certification requirements are satisfied, however, it is in the best interests of the United States to move forward with implementing the agreement with China for cooperation in civilian nuclear technology. The subsequent interactions between U.S. nuclear energy experts and the Chinese can only enhance their understanding of how to develop and operate a safe nuclear energy program—and how to further strengthen their nuclear non-proliferation infrastructure.

The availability of U.S. technology as China approaches near-term decisions on standardizing its future nuclear power plant program provides an opportunity for creating significant jobs in the United States and improving the balance of trade with China. Finally, U.S. nuclear technology would enhance the safety of China's nuclear energy program while realizing critical environmental and clean air benefits.

U.S.-China Commercial Nuclear Commerce

Nonproliferation and Trade Issues

A Consensus Report of the CSIS
Steering Committee on U.S.-China
Commercial Nuclear Commerce

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SEPTEMBER 1997



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Chairman's Statement

As American interests continue to deepen in Asia, U.S. policy toward China has taken on increasing importance. China is an emerging global power, and our broad bilateral agenda includes such issues as regional stability, limiting the spread of weapons of mass destruction, free and fair trading, democracy and human rights, and a host of global issues ranging from terrorism to narcotrafficking to the environment.

In a number of these areas, there is a growing mutuality of interest, for example, in preserving a stable and nonnuclear Korean peninsula. In others—such as human rights—deep differences remain. The task of American policy is to expand the areas of shared interests while narrowing the differences. This task can only be accomplished by engaging with China across the full bilateral agenda.

Bilateral peaceful nuclear cooperation is one item on that agenda. Improvements in China's nonproliferation policies over the past decade have brought the prospects for such cooperation closer than ever before. The administration is now negotiating with the Chinese government in an effort to fulfill a number of congressional conditions to permit U.S.-China peaceful nuclear cooperation to proceed.

It is important to remember that China has already acquired a number of nuclear power plants and, with or without U.S. cooperation, will doubtless acquire many more. The issue is not whether or not China should have a nuclear power program, but rather whether the United States should be the only country in the world to exclude itself from participating in that program.

The attached report concludes that, if the president can certify that the congressional conditions have been met, it is strongly in the U.S. national interest to participate in the Chinese nuclear power program. Much is at stake. The prospect of peaceful nuclear cooperation helped persuade China in recent years to join the Nuclear Non-Proliferation Treaty, to sign the Comprehensive Test Ban Treaty, and to cooperate with U.S. efforts to halt North Korea's dangerous nuclear program. Continued Chinese cooperation on such sensitive issues will be jeopardized if the United States fails to acknowledge this process.

Environmentally, the United States and other nations will benefit as China—in meeting its expanding energy needs—adopts technologies such as nuclear energy that do not increase greenhouse gas emissions. It is also in the national interest to reduce the risks of nuclear accidents by allowing China to benefit from the great strides in safety technology that American companies have made in recent years. Economically, selling nuclear power stations and related fuel and services could narrow the growing U.S. trade deficit with China by billions of dollars, while adding tens of thousands of jobs for American workers.

In short, engaging with China on nuclear issues and establishing a presence in the country to assure the highest levels of safety, security, and environmental protection, will help promote American interests in the years ahead. The attached report does not pretend to answer every question. Nor does it deny that deep differences will continue to divide our two countries and that the United States will need to address these differences. It is clear, however, that if China meets the conditions for presidential certification required to commence bilateral nuclear cooperation, failure to proceed will strip the United States of valuable leverage to secure further progress—or to prevent reversals—in the pursuit of American nonproliferation objectives with China.

Brent Scowcroft
Chairman

Executive Summary

This year has witnessed an intense but, on balance, constructive discussion about the future of U.S.-China relations. The intensity of the debate in part reflects current events—such as the reversion of Hong Kong to Chinese sovereignty, continuing tensions between Taipei and Beijing, and the congressional and judicial investigations into the possible influence of Chinese contributions upon the American political scene. The debate also reflects deeper and enduring issues. Is America's proper role in the world one of increasing engagement and free trade, or one of withdrawal and unilateral sanctions? Is China inexorably destined to become America's chief military and ideological rival, supplanting the Soviet role as we move from the Cold War to the post-Cold War era? Or can the United States and China work together to advance common aims, even as fundamental issues continue to divide our two countries and require tough-minded policies to address U.S. concerns?

The issue of U.S.-China peaceful nuclear cooperation must be viewed in this context. Currently, based on congressional enactment, significant civilian nuclear cooperation is precluded between our two nations. The question now is whether developments of recent years justify engagement with China in this area just as U.S.-Chinese cooperation has grown in so many other sectors. This inquiry cannot be conducted in a vacuum. Since no other nuclear supplier has followed our lead in eschewing nuclear trade with China, the relevant question is not whether China should develop nuclear energy, because it already has nuclear reactors and is building more, but rather whether the United States should be the only nation in the world that excludes itself from access to the Chinese nuclear energy program.

This report concludes that the United States should not exclude itself from the Chinese nuclear energy program. To the contrary, the report finds that—provided China meets the requisite nonproliferation criteria—it is strongly in the U.S. national interest to engage in peaceful nuclear cooperation with China, from security, environmental, safety, and economic perspectives.

Security

By the mid-1980s, China had begun to signal that it would oppose nuclear proliferation, a shift that opened the door to the conclusion by the Reagan administration of a 1985 agreement for peaceful nuclear cooperation between the two countries. At the same time, concerns over continued Chinese nuclear assistance to nations such as Pakistan led the U.S. Congress, after approving the agreement, to require presidential certification that Beijing's actions did not promote proliferation as a condition precedent to implementation of the 1985 agreement. U.S. restrictions

against nuclear cooperation with China were tightened further through the Tiananmen Square sanctions that were imposed following the tragic suppression of pro-democracy demonstrators there in 1989.

Since 1990, China has continued, at times unsteadily, to improve its nonproliferation record. In 1992, China acceded to the Nuclear Non-Proliferation Treaty, whose extension China later supported in 1995. In 1994, China strengthened its commitment to observe the Missile Technology Control Regime guidelines, and worked closely with the United States in halting North Korea's dangerous nuclear program under international monitoring. In 1996, China pledged to refrain from further assistance to Pakistan's unsafeguarded nuclear facilities, adopted a nuclear testing moratorium, signed the comprehensive nuclear test ban and ratified the Chemical Weapons Convention.

At the same time, concerns about certain continued Chinese exports persisted, and there have been setbacks. The provision of nuclear technology to Pakistan is perhaps the most worrisome, but Chinese cooperation with Iran also presents a serious problem. The best way to handle these concerns, however, is to address them in the context of a broader relationship in which China sees some advantage to responding to American concerns, rather than defying these concerns as a matter of national pride.

Specifically, in order for the president to certify that congressional conditions have been met, the administration must find that China continues to abide by its May 1996 commitments not to assist unsafeguarded nuclear facilities. In addition, the administration must secure commitments from China that it will (1) not engage in the prohibited transfer of nuclear weapons technology to a nonnuclear weapons state, and (2) implement effective export controls to support its nonproliferation commitments. The prospect of U.S.-Chinese nuclear cooperation provides incentive for China to make those commitments.

Environment

An environmental assessment of the role of nuclear energy in China can only be understood in the context of the overall energy picture in the country. That picture is dominated by the continued dynamic growth of the Chinese economy, which is projected to extend well into the next century. Growth in the Chinese economy and incomes is expected to be accompanied by growth in the demand for electricity. To meet that demand, China plans around 500,000 megawatts of electrical generating capacity to be on-line by the year 2010. Four percent of that total, or 20,000 megawatts, is projected to be supplied by nuclear power.

Even if these projections prove optimistic—because of a combination of declining growth rates and increased renewable energy sources—China clearly will need to expand substantially its installed electrical generating base. China will draw on hydro resources, but many of these are far from consumption centers and can themselves entail significant environmental consequences. Expanded reliance on oil will increase Chinese reliance on supplies from the Persian Gulf. Expanded reliance on coal brings obvious environmental consequences in terms of greenhouse gas and other atmospheric emissions. As early as 2015, China is projected to become the largest emitter of greenhouse gases in the world.

Safety

U.S. nuclear technology is demonstrably safe and is based upon an infrastructure with the most operating experience in the world. The U.S. industry—with the support of the U.S. Department of Energy—has developed standardized, advanced light-water reactors that are engineered and designed to be safer, more reliable, and more cost competitive than any other existing technology. The Nuclear Regulatory Commission (NRC) earlier this year has certified two of these designs; and a third design is expected to receive final design approval from the NRC next year.

But safety is not purely a function of choosing the best reactor designs. Safety also depends on standardization. Where every plant is unique, reactor engineers, regulators, and operators must learn different systems, with different features, raising a risk that the very complexity of the mix of reactor types could increase the likelihood of mishap. China, aware of this risk, is expected within the next few years to select families of standardized reactor designs from the large number of designs now available. Given the U.S. investment in reactor safety, it would be regrettable from the perspectives of both global safety and national opportunity cost if the window into the Chinese nuclear power market were to close and deny access to U.S. designs for decades to come.

Economic Considerations

China represents the single largest energy market for power generation equipment in the world. It plans to have 50,000 megawatts of nuclear generating capacity in operation by the year 2020. To meet this goal, China will need to order 2,400 megawatts of nuclear capacity per year. This is equivalent to ordering a new nuclear plant (with two reactor units) every year. Such a market could produce more than \$1.6 billion per year in U.S. exports to China, with more than 25,400 U.S. technical jobs supported by those exports. If the United States unnecessarily continues to prevent its companies from participating in the Chinese nuclear power market, the principal effects will be felt in two places: the United States, through loss of potential jobs and revenues, and abroad, as U.S. competitors gain the same jobs and revenues.

Conclusion

China wants an opportunity to purchase U.S. nuclear energy plants because of their quality, their safety, and the role that they will play in fostering U.S.-China engagement. China wants U.S. participation also to increase competition among potential suppliers and to drive down the unit price of each reactor. It is in our national security interest to engage China in peaceful nuclear cooperation in order to persuade it to continue to improve its nonproliferation track record. It is also in the U.S. national interest from environmental and safety perspectives that China have access to U.S. nuclear plant designs. Moreover, exports of U.S. nuclear power stations would provide one of the few prospects to narrow significantly the U.S.-

China trade deficit. Of course, U.S.-Chinese peaceful nuclear cooperation cannot and should not go forward without adequate assurances—and actions—from China concerning its nonproliferation policies.

Recommendation

Our goal continues to be a China unequivocally committed to the prevention of nuclear weapons proliferation. Cooperation with China that would support a continuing dialogue on proliferation-related issues is clearly the best course. As such, the administration should assess whether China has met the essential requirements for certification and, if so, provide the necessary certification to Congress to implement the 1985 agreement at the earliest possible date. Once China has met the criteria for certification, the U.S. government should actively support engagement with China on civilian nuclear cooperation.

CHAPTER 1

Historical Background of U.S.-China Relations

America's interests in its relationship with China reflect the broader scope of U.S. interests in Asia. Both have been remarkably consistent since the end of World War II and have delivered benefits for the entire region. The context for those interests has been altered by unprecedented changes in the balance of power and economic growth. In large measure, these are the dividends of reliable U.S. policies. It is worthwhile to remind ourselves what our durable interests are, whether they have been affected by recent developments, and how both the United States and China can benefit from them.

In any relationship, it is important for each party to understand what each expects of the other. This is more or less the case in the U.S.-China relationship, including that involving nuclear cooperation. But it is equally true that frequent changing or upgrading of the requirements—"moving the goal posts" as it is often described—inevitably strains the basis of trust on which an emerging relationship rests.

The New Pacific

Twenty-five years after the signing of the 1972 Shanghai Communiqué, we encounter a regional scenario highly favorable to U.S. interests. The U.S.-Japan security relationship has provided a reassuring stage on which regional actors have achieved growth unmatched in economic history, uninterrupted by widespread war or destabilizing threats. Japan and China may be the principal beneficiaries of this stability, but the American presence anchors expectations about security throughout the area. The United States and China are participating in North-South Korean talks in a manner that confirms shared interests in a peaceful outcome. South Korea, the Philippines, and Taiwan are emergent democracies where continued growth and a better life for ordinary people are the common, reasonable expectation.

At the same time, the region remains in many ways a dangerous place. The Korean Peninsula is now the most dangerous flashpoint in the world, as the last Stalinist regime in Asia faces collapse. Tensions across the Taiwan Strait could once again erupt. The fragile coalition government in Cambodia has splintered. The economic miracles of Southeast Asia could stall as a result of financial difficulties or the uncertainties of political succession.

Discarding the Mythology

Against this backdrop, U.S. commentators unfortunately often resort to caricatures in describing a U.S.-China relationship that is multifaceted and complex. An unstable regime about to implode in 1989, China became the monolithic, expansionist power of the mid-1990s. It is the most important big emerging market and the source of our fastest growing bilateral trade deficit.

An accurate picture is much less sensational. U.S.-China relations have benefited from a stable bipartisan consistency since 1979. The dialogue—conducted at the highest levels of both governments—has included military-to-military issues, intelligence, and strategic interests. The steady growth in U.S. investment in China since Deng Xiaoping's reforms of 1979 stalled after the Tiananmen events. However, since 1991, both investment and trade (exports and imports) have accelerated, making China the fifth largest U.S. trading partner.

Chinese military spending has fostered stories about the inevitability of "the world's largest army" achieving regional hegemony. Analysts also have extrapolated Chinese economic development to conclude that China is destined to be the world's largest economy in the next decade. This ignores radical reductions in the state sector, the banking crisis, regional disparities, and massive unemployment.

To be sure, genuine differences have deeply divided the two nations. During the cultural revolution of the 1960s and the "Gang of Four" period following the death of Mao Zedong, China not only subjected its own people to horrible suffering but also pursued policies strongly opposed by the United States. And even during the far more pragmatic era dominated by Deng Xiaoping, continued constraints on democracy and abuse of human rights in Tibet and elsewhere are antithetical to many of our most cherished values.

Nevertheless, the myths are unhelpful at two levels: Americans risk believing them and Chinese might believe and act on them. The mythic China—either as the greatest opportunity or the greatest threat—distorts both domestic public opinion and the policy debate. The mood swings of opinion leading elites—including Congress—undermine public faith in a relationship that is complex, and becoming more so. A generation unaware of the uncertainties that prevailed before the normalizing effects of the three communiqués is taking its cue from the mix of alarmism and unrealistic expectations that dominates the treatment of U.S.-China relations.

Undeniably, China is an emerging global power. This poses profound challenges to a global system that has an unimpressive record of managing such events. But China's rise to power is asymmetric. Chinese economic prominence—really its export strength—is far ahead of either its political evolution or its military capability.

China's foreign policy is only beginning to show an authentic self-confidence, and describes a vision of China's larger interests. Thus far, that vision has concentrated on reducing traditional tensions in its regional relationships. There is a new maturity in China's regional foreign policy that has made real progress in eliminating the worst of the historic border disputes. For the first time in the life of modern China, it has a *modus vivendi* with Russia that significantly reduces tensions on the

world's longest militarized border. So, too, recent accommodations with India and Vietnam have reduced border tensions in those trouble spots. Although there are enduring and deep-felt suspicions about Japan, there is a high-level dialogue on a range of issues that has reduced state-to-state frictions. The new Chinese foreign policy seems characterized by regional consolidation of gains. The major risks are of miscalculation over China's expansive reading of its claims at sea. These points of instability reach from Japan to the remote Southern Pacific, raising doubts about China's regional goals all along the way.

China's leadership has just begun to make high profile official visits to Europe, Asia, and Latin America. Denied the rhetoric of nonalignment, China is in the earliest stages of finding a new vocabulary for its foreign policy. There is little or no evidence that this new voice poses a basic threat to U.S. interests. Indeed, there is good reason to think that China prefers U.S. strength and leadership to any of the alternatives. Chinese leaders may profess to be "multilateralists," but their best resource is a healthy, open relationship with their largest customer.

China's military doctrine is evolving, but its capability is at least a decade away from even regional dominance. Defense increases of over 12 percent per annum are real and potentially a serious concern, but they come from a very low base. The People's Liberation Army (PLA) air force cannot protect its own ground troops and naval assets in coastal waters. The air force and navy are probably two decades or more away from global force projection capability, even assuming a constant growth in the military budget. Such consistency has not been characteristic of China's defense budget. If China's behavior takes a significant change in course, becoming aggressive and acquisitive, there is time and capability enough to respond. U.S. doctrine and assets are much more flexible than China's.

Even China's impressive economic strength is a mixed picture. The overall growth and improvement in urban incomes is well documented, but its underpinnings deserve more scrutiny. Domestic capital markets are immature, internal commerce is fettered both by elements of the command economy and local regulatory protectionism that encumbers both domestic and foreign producers. Moreover, the central government is struggling to diversify investment and growth, pushing prosperity beyond a few large coastal centers to the vast interior where seven out of ten Chinese live. The Chinese leadership and domestic economic officials speak and write about these problems in very frank terms; foreign observers often minimize these challenges.

China now faces profound challenges to its success. It has accomplished all that it can through experimentation, incremental reforms, and "model" projects. The last step in its economic transformation requires a great leap of faith, involving simultaneous privatization of state-owned enterprises, banking reform, and retraining/reemployment on a scale never attempted. The goal is to achieve all this while maintaining growth of around 10 percent, while avoiding inflation. In addition, it will float its currency on world markets at the same time, putting at risk its exports and its interest rate regime.

U.S. and Chinese views of the need to accelerate the process of China's accession to the World Trade Organization (WTO) reflect a mutual desire to integrate China's economy squarely in the global system. In the short term, China stands to

gain a good deal from accepting WTO disciplines, even given that these obligations will impose substantial additional burdens on inefficient industries and the pace of reforms. But the advantages of fixing China's commitments to open markets in the context of the WTO system of reciprocal benefits will inure to its principal trading partners for years to come. Coupled with greater visibility and certainty in its financial service investment regimes, the WTO commitments will support the rule of law and foster confidence in China's reforms.

Conclusion

American and Chinese interests in Asia are often congruent, and our assets are complementary. America's broad credibility, the product of 50 years of constant attention to the region, allows China to strengthen its regional security while managing reforms and growth. An honest appraisal admits an asymmetry, since China needs an active, well-disposed United States to support solutions more often than America seeks direct Chinese intervention to achieve its maximum results. Still, from stability on the Korean Peninsula to energy and food security, U.S.-China cooperation should look more attractive to both great powers than manufacturing differences that confound shared priorities.

CHAPTER 2

China's Electric Energy Needs

China is simply “the single largest energy market for power generation equipment in the world.”¹ Its economic growth from 1991 to 1995 averaged approximately 12 percent with an expected growth rate of 8 percent from 1996 to 2000. These impressive rates of economic growth produce massive requirements for electricity. According to the Ministry of Electric Power, however, 15 to 20 percent of China’s present demand for electricity cannot be met,² and an estimated 100 million Chinese, living in the countryside, have no electricity.³

By the year 2010, world energy demand is expected to grow approximately 40 percent above current levels. Nearly half of the expected increase will come from fast developing economies of the Asia-Pacific region. China alone is expected to account for 20 to 25 percent of the total world increase in demand.⁴ Economic and population growth will fuel this demand. For example, if China’s population continues to grow at one percent—its estimated growth for 1995—China’s population would increase by 12 million people per year. This is the equivalent of adding the population of Illinois, including Chicago, to the United States each year. Although China is the world’s second largest energy consumer, its per capita energy consumption in 1995 was 29.7 million Btu while U.S. per capita energy consumption was 331.8 million Btu⁵—over 11 times that of China.

China’s electric generation capacity more than tripled between 1980 and 1996 to an installed generating capacity of 236,500 megawatts. To meet the goals of its Ninth Five Year Plan (1996–2000), China would need to attain 300,000 megawatts of generating capacity by the year 2000 or the equivalent of ordering at least 141 power plants during this five-year period. In addition, future goals require an installed generating capacity of over 500,000 megawatts by the year 2010⁶ or an

1. Xavier Chen, International Energy Agency, *China in The World Energy Outlook*, paper delivered at the China Energy Summit, June 18–20, 1996, Beijing, China.

2. *Country Analysis Briefs - China*, Energy Information Administration, U.S. Department of Energy, 1997. Lin Kong Xing, director of the Henan Province Electric Power Bureau, was quoted in the December 19, 1994 issue of *Forbes* magazine as stating: “We have to shut down electricity to homes and factories two or three days a week.” Henan Province is in central China.

3. “Only those living in isolated, scattered villages in mountainous and remote areas will not have electric power by 2000. Those 60 million persons... will have to wait somewhat longer.” Chang Weimin, *Power to Surge Across Country*, *China Daily*, April 16, 1997.

4. International Energy Agency, *World Energy Outlook*, 1996.

5. *Country Analysis Briefs - China*, *Ibid.*

6. Shi Dazhen, Power Industry Minister, *Electric Power Industry in China, 1995*, edited by Information Research Institute.

addition of at least 333 new electric power plants—above and beyond the 141 power plant orders planned by the year 2000.

Table 1 shows the percent of generation expected in the year 2010 to come from each major source of energy.

Table 1
China's Electric Generating Goals,
2010

Source	Megawatts	Percent of Total
Thermal plants*	374,000	73.1
Hydroelectric power	115,000	22.5
Nuclear electric plants	20,000	3.9
Renewables**	2,500	0.5
Total	511,500	100
*Primarily coal, but including natural gas and oil.		
**Including wind, solar and geothermal energy sources.		

Electric Energy Options

China's electric energy options are limited by several geographic factors:

- ☐ 83 percent of hydropower resources are located in the western half of China;
- ☐ 77 percent of coal is found in relatively remote areas of northern China; and
- ☐ 85 percent of oil resources are found north of the Yangtze River.

In addition, factors affecting China's electric generation capacity include the poor quality of transmission networks, insufficient exploration for new energy resources, and an inadequate capacity to transport coal. China generated 1,079 billion-kilowatt hours in 1996 or 899-kilowatt hours per capita compared to over 11,000 kilowatt hours per capita in the United States. In 1997, 82 percent of China's electricity will come from thermal plants, primarily coal, 16.6 percent is expected to come from hydroelectric plants, while 1.3 percent is to come from nuclear generation.⁷

Coal

Today, China is the world's largest producer and consumer of coal. China's coal resources are estimated to be 11 percent of the world's proven reserves. Much of the coal produced is consumed in the country's 400,000 industrial boilers,⁸ but an increasing percentage is going into electric generation.

7. Chang, *Ibid.*

The best Chinese coal, in terms of accessibility and quality, is found in northern China. Coal in the southern regions, closer to urban and commercial centers, is generally higher in sulfur and ash and, therefore, far less suitable for use.⁹ The main factor constraining the use of the northern reserves is transportation.¹⁰ The lack of adequate rail capacity, coupled with the rugged terrain, has limited this option for energy planners. To fuel a 1000-megawatt coal-fired plant would require five trainloads of coal a day each transporting 1400 metric tons of coal.¹¹

To partially overcome the transportation barrier, China's energy plans include adding new power plants close to coalmines. Electricity could then be transported via high voltage power lines to regional demand centers. Because of transmission line losses, however, demand centers in the eastern and southeastern coastal areas will not benefit from these new facilities.

Hydroelectric Power

China has extensive hydroelectric resources—about 676,000 megawatts—over half of which is commercially exploitable. Good potential sites are found on the Yellow and the Yangtze Rivers. Virtually all the good sites, however, are at significant distances from the coastal areas where economic growth and electric demand is at its highest. An estimated 75 percent of China's hydroelectric sites are in the southwestern provinces of Sichuan, Guizhou, Yunnan, and Tibet.¹²

Nevertheless, hydroelectric power represents a significant and growing resource that China plans to use for electric generation. China's energy planners are giving priority to the construction of hydroelectric facilities in the south and central regions of the country. A large portion of the planned increase in hydroelectric power is expected to come from the Three Gorges Hydroelectric Project located on the Yangtze River. This project is targeted for completion by 2009 and will provide 18,000 megawatts of electricity.¹³

The need for large-scale relocation of populations creates a difficulty in siting hydroelectric facilities. The Three Gorges Project, for example, is expected to displace over one million people. Past projects have displaced from 3,000 to 300,000 people.¹⁴ As a result, although hydroelectric power is both clean and renewable, the distance between appropriate sites and demand centers coupled with the need to uproot and relocate large numbers of people and the destruction of important national landmarks, impose limits on its utilization.

8. Zhang Zhichuan, China National Environmental Protection Corporation, *Thermal Power Generation and Environmental Impact in China*, 1994.

9. Study Papers, *China's Economic Future: Challenges to U.S. Policy*, Joint Economic Committee of Congress, GPO, 1996, p. 247.

10. It is estimated that 40 percent of China's railway capacity is dedicated to the transport of coal. Cheng Xuemin, *Modern Power Systems*, Wilmington Publishing Ltd. (UK), 1995.

11. Hans Blix, Director General, International Atomic Energy Agency, *The Safe and Peaceful Utilization of Nuclear Energy in the Dynamic Pacific Basin*, 9th Pacific Basin Nuclear Conference, Sydney, Australia, May 2, 1994.

12. Cheng, *Ibid.*

13. Power from the project will be used in central China, the eastern part of Sichuan Province and east China, Cheng, *Ibid.*

14. Cheng, *Ibid.*

Oil

China is the world's sixth largest oil producer and over 17 percent of the energy used in China comes from oil. But oil production has been falling behind demand—China became a net oil importer in 1993—and it is estimated that by the year 2010, China will need to import considerably in excess of 2 million barrels of oil per day (b/d)—equal to the present crude oil production of Kuwait. Present imports come from Indonesia and the Middle East.

On June 9, 1997, the *Washington Post* reported that "China is negotiating long-term oil-supply contracts with Middle Eastern countries and is considering the establishment of a strategic reserve." It went on to report that the "official China Daily...said today that China will need to import nearly a million barrels a day by 2000, twice the current level. With China's domestic oil industry struggling to maintain production at about 3.1 million barrels a day, imports will have to increase sharply to keep up with the demands of a rapidly expanding economy."

With the increasing demand for oil and the strategic implications that result from reliance on the large oil reserves of the Middle East, its use as a boiler fuel for electric generation—never large—is shrinking. If oil were to be used for power generation, 2 million metric tons of fuel oil per year (40,000 b/d) would be necessary for every 1000 megawatts of generation.

Natural Gas

Natural gas accounts for a small percentage of the fuel used in China. Estimates of natural gas reserves vary, although it is expected that with more intensive exploration, proven reserves would increase. China would have to build extensive natural gas pipelines, however, to enable this relatively clean resource to play a significant role in China's future.

Should major offshore gas fields be found, it would be possible to build pipelines to coastal centers where electricity is in great demand. Alternatives, such as liquefied natural gas, are expensive and not generally competitive for electric generation with other fuel sources. Feasibility studies of natural gas pipelines from the Central Asian republics of the former Soviet Union and from Russia's Eastern Siberia have been under investigation. Although use of natural gas for electric generation would be environmentally beneficial, the probability of its use on a significant scale lies well into the future.

Renewables, Conservation, and Efficiency

Energy resources such as wind, solar, and geothermal can make an important contribution in specific local circumstances. Good sites for renewables, such as geothermal, can be found in some remote and economically underdeveloped areas in Tibet and in Yunnan province, which borders Burma. These areas also tend to lack coal or oil reserves. If modern technologies and financing can be provided, such areas could develop renewable resources for power generation. This could help address China's growing energy demand.

China will likely encounter the same difficulties that the United States has,

however, in promoting the large scale use of renewables: the low-energy density of these sources. For example, to generate the output of a 1000-megawatt power plant, one would need an area of 50 to 60 square kilometers of solar cells or wind-mills or an area of 3000 to 5000 kilometers for growing biomass.¹⁵ China may also pursue expanded conservation and efficiency efforts. Even significant progress in this area would leave tens of thousands of megawatts of electrical demand to be satisfied through conventional means. Thus in China, as in the United States, renewables, conservation, and efficiency are unlikely to displace the need for added increments of installed electrical generating capacity.

The Role of Nuclear Energy in China

China's future energy plans include an important role for nuclear energy. Currently, three nuclear power plants are in operation and eight more have been ordered. The total capacity of the three existing plants is 2100 megawatts. Qinshan 1 is a 300 megawatt pressurized water reactor (PWR) that went into operation in 1991. The Chinese designed it, and approximately 70 percent of its components came from Chinese sources. This plant serves the Shanghai area and three eastern provinces. The Qinshan site is south of Shanghai. Two 906-megawatt nuclear plants, which were built under contract with the French, are located at Daya Bay in Guangdong province. These plants serve the Hong Kong area. The units were connected to the electric grid in 1993 and 1994, respectively.

The new plant orders include two 600-megawatt PWRs that will be based on Chinese designs, and to the extent possible, Chinese suppliers. These plants are now under construction at the Qinshan site. At Ling Ao, which is near Daya Bay, two 985-megawatt PWRs ordered from the French (Framatome) have also started construction.

Two 740-megawatt CANDU-6 pressurized heavy water reactors (PHWR) supplied from Canada (Atomic Energy of Canada Limited-AECL) have been ordered and will also be located at Qinshan. Construction is expected to begin in 1998 and will last six years. Lastly, two 1000-megawatt Russian-designed VVER-1000 PWRs are to be built in Lianyungang, a port city in Jiangsu province, north of Shanghai. All of these new plants should be completed and connected to the electric grid in the next decade.

15. Hans Blix, *Nuclear Energy in the 21st Century*, address to the joint IAEA/CNNC seminar on twenty-first century development in China, May 23, 1997.

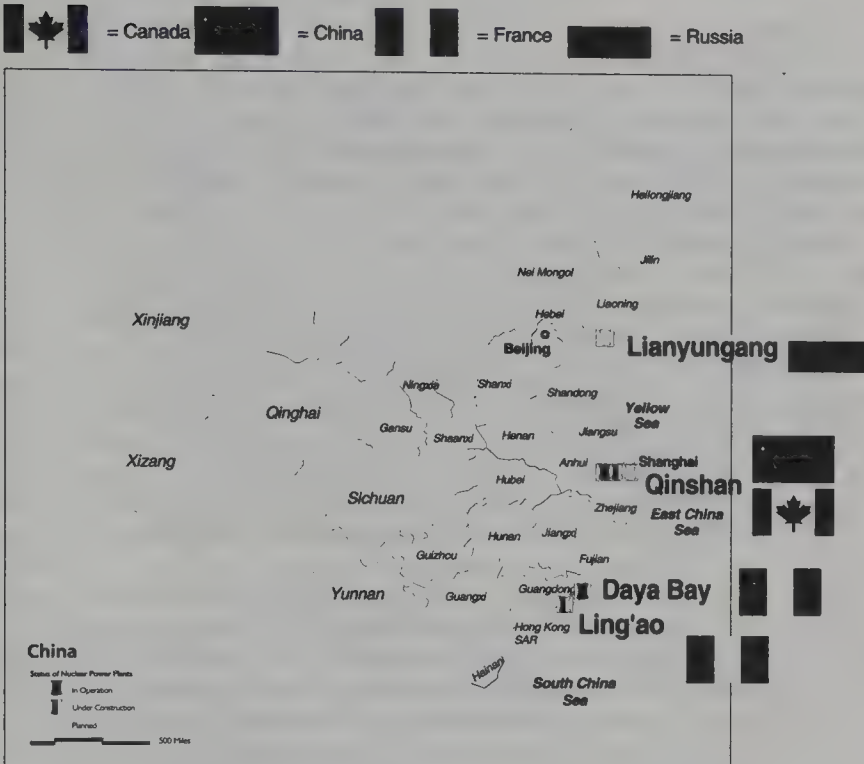
Table 2
China's Nuclear Power Plants in Operation,
Under Construction, and Planned
December 31, 1996

Name	Location	Plant Capacity (megawatts)		Reactor Size and Number
In Operation		Design	Existing	
Daya Bay	Guandong Province	1,800	1,800	900 x 2
Qinshan Phase 1	Zhejiang Province	2,900	300	300 x 1
Under Construction				
Qinshan Phase 2	Zhejiang Province			600 x 2 700 x 2
Ling'ao	Guandong	2,000		1000 x 2
Planned*				
Qinshan Phase 3	Zhejiang Province	1,400		700 x 2
Lianyungang	Jiangsu Province	2,000		1,000 x 2
Note: Daya Bay has two pressurized water reactors. The reactor in operation at Qinshan is a pressurized water reactor as are the two 600-megawatt reactors under construction. The two 700-megawatt reactors under construction are CANDU. The two reactors under construction at Ling'ao are pressurized water.				
*Covers only those projects where contracts have been signed. Qinshan Phase 3 will comprise two heavy water reactors, with completion and operation in 2003. Lianyungang replaces Dalian of Liaoning Province. Two VVER reactors imported from Russia are to be installed. Construction is to begin around 1999, with operation possible by 2005.				

Table 3
China's Nuclear Electric Power Plants
in Operation, Under Construction, and Planned
by Reactor Supplier

In Operation	Reactor Supplier
Daya Bay	France
Qinshan, Phase 1	China
Under Construction	
Qinshan, Phase 2	China
Ling'ao	France
Planned*	
Qinshan, Phase 3	Canada
Lianyungang	Russia
*Covers only those projects where contracts have been signed.	

Nuclear Electric Power Plants in Operation, Under Construction, and Planned by Reactor Supplier



CHAPTER 3

National Security Interests

Security

The most compelling national interest to be served by engaging in peaceful nuclear cooperation with China is the opportunity to persuade China to continue to improve its track record on nonproliferation. A major objective of U.S. foreign policy with China is to get active participation by China in multilateral nonproliferation regimes, which is necessary to halt the spread of weapons of mass destruction and their delivery systems.¹⁶ The timing is propitious.

Throughout much of the Cold War, China openly rejected U.S. nonproliferation efforts as a device to perpetuate superpower hegemony over the nations of the nonaligned movement. After the death of Mao, that view began to evolve. By the mid-1980s, China had begun to signal that it would oppose nuclear proliferation and would not participate in it, a shift which opened the door to the conclusion by the Reagan administration of a 1985 agreement for peaceful nuclear cooperation between the two countries. At the same time, concerns over continued Chinese nuclear assistance to such nations as Pakistan, led the U.S. Congress to impose nuclear trade restrictions which were further tightened on human rights grounds, as noted earlier.

Despite these constraints, China continued to take steps evidencing efforts to implement a policy of nonproliferation. Under U.S. urging, in 1992 China acceded to the Nuclear Non-Proliferation Treaty, whose extension China later supported in 1995. In May 1996, China reiterated its support for the Nuclear Non-Proliferation Treaty when it committed not to assist unsafeguarded nuclear facilities (including Pakistan). In 1994, China strengthened its commitment to observe the Missile Technology Control Regime guidelines. In 1996, China adopted a nuclear testing moratorium, signed the comprehensive nuclear test ban, and ratified the Chemical Weapons Convention.

To be sure, concerns about Chinese exports have persisted, and U.S. efforts to pursue cooperative nonproliferation efforts have suffered setbacks. Twice the United States has imposed unilateral sanctions on China for missile-related exports to Pakistan, while in May 1997, Secretary of State Albright announced the imposition of additional sanctions against Chinese entities for cooperation with Iran's chemical weapons program.

The best way to handle these concerns, however, is to seek to address them in the context of a broader relationship based on shared objectives. It was through intensive engagement for several months in early 1996 that China and the United

16. State Department fact sheet on U.S.-China relations, June 20, 1997.

States successfully resolved the crisis triggered by the Chinese transfer of certain ring magnets to Pakistan, through an exchange of statements that committed Beijing, for the first time, to refrain from assistance to unsafeguarded nuclear facilities. That commitment set the stage for follow-on discussions aimed at persuading China to curtail its nuclear cooperation with Iran and to adopt and implement effective nuclear export controls, with a view to meeting the congressional conditions for allowing full implementation of the 1985 agreement for peaceful nuclear cooperation between the United States and China.

Our goal continues to be a China unequivocally committed to the prevention of nuclear weapons proliferation. Cooperation with China that would afford a continuing dialogue on proliferation-related issues is clearly the best course. Furthermore, engagement through nuclear technology exchange would provide opportunities to put in place a strong infrastructure of controls and create the culture necessary for a solid nuclear nonproliferation regime. Former Senator J. Bennett Johnston expressed it succinctly in his farewell address from the Senate: "Those who advocate sanctions do not understand that trade is not a reward for good behavior, but rather an instrument for fostering it."¹⁷

Under the Atomic Energy Act of 1954, the United States must negotiate a bilateral agreement for nuclear cooperation with any nation to which it intends to supply nuclear technology, materials, equipment, and technical services. In July 1985, the United States and China entered into such an agreement. The Agreement for Cooperation Between the Government of the United States of America and The Government of the People's Republic of China Concerning Peaceful Uses of Nuclear Energy states the terms and conditions under which these transfers may take place. Two separate laws have placed conditions on the implementation of the agreement. China's activities in the past have made it impossible for Presidents Reagan, Bush, and Clinton to certify that China has fulfilled these conditions.

As required by law, the agreement was submitted to Congress for a period of 30 days of continuous session. Though it need not have taken any action for the agreement to become effective, Congress gave its approval. Joint Resolution (P.L. 99-183) passed on December 16, 1985 imposed several conditions before the agreement could be implemented.¹⁸

In effect, the president would have to make three critical certifications to Congress, namely, that:

- ☐ Reciprocal arrangements for visits and exchanges of information ensure that nuclear transfers made under the agreement are used solely for peaceful purposes;
- ☐ China has provided assurances and the United States believes from these assurances and all other information available to it, such as intelligence data, that China is not engaged in the prohibited transfer of nuclear weapon technology to a nonnuclear weapon state; and

17. *Lessons and Legacies, Farewell Addresses from the Senate*, The Eisenhower World Affairs Institute, 1997, p. 96.

- ❑ Although the agreement indicated that China does not intend to enrich material to more than 20 percent or to reprocess fuel through the use of U.S.-supplied material or equipment, the agreement states that a request to do so, which would require U.S. approval, would be viewed “favorably.”¹⁹ Congress wanted the president to certify that this wording would still allow the United States to reject a Chinese request to alter such material or fuel (e.g., to reprocess the fuel).

To date, these prerequisite conditions could not be met, in part, because China has provided nuclear technology to Pakistan. Pakistan is not a signatory of the Nuclear Non-Proliferation Treaty and doesn't allow International Atomic Energy Agency (IAEA) inspections of its entire nuclear program. The United States believes that China's technology and equipment have helped Pakistan in its development of a nuclear weapons capability and, therefore, the president could not certify that China was “not engaged in the prohibited transfer of nuclear weapon technology to a nonnuclear weapon state.”

In addition, the Foreign Relations Authorization Act, Fiscal Years 1990 and 1991 (P.L. 101-246) imposed new restrictions on trade with People's Republic of China (PRC) in response to the June 1989 Tiananmen tragedy. Suspended were:

- ❑ Issuance of any new insurance, reinsurance, guarantees, financing, or other financial support with respect to the PRC by the Overseas Private Investment Corporation;
- ❑ Issuance of funds under the Foreign Assistance Act for any new activities of the Trade and Development Program in the PRC;

18. The agreement states that:

“(b) Notwithstanding any other provision of law or any international agreement...

(1) until the expiration of a period of 30 days of continuous session of Congress after the President has certified to the Congress that—

(A) the reciprocal arrangements made pursuant to Article 9 of the Agreement have been designated to be effective in ensuring that any nuclear material, facilities, or component provided under the Agreement shall be utilized solely for intended peaceful purposes as set forth in the Agreement;

(B) the Government of the People's Republic of China has provided additional information concerning its nuclear nonproliferation policies and that, based on this and all other information available to the United States Government, the People's Republic of China is not in violation of paragraph (2) of section 129 of the Atomic Energy Act of 1954; and

(C) the obligation to consider favorably a request to carry out activities described in Article 5(2) of the Agreement shall not prejudice the decision of the United States to approve or disapprove such a request;

(2) until the President has submitted to the Speaker of the House of Representatives and the chairman of the Committee on Foreign Relations of the Senate a report detailing the history and current developments in the nonproliferation policies and practices of the People's Republic of China.

The report described in paragraph (2) shall be submitted in unclassified form with a classified addendum.” P.L. 99-183, 99 Stat. 1174 (1985).

19. Article 5(2), Agreement for Cooperation.

- ☐ Issuances of export licenses for the export to the PRC of any defense articles on the U.S. Munitions List, including helicopters and helicopter parts, except for systems and components to be incorporated into civil products;
- ☐ Issuance of any export license for any crime control or detection instruments or equipment;
- ☐ Any exports of satellites intended for launch from a launch vehicle owned by the PRC; and
- ☐ Applications for any license to export nuclear material, facilities, or components under the Agreement for Cooperation, or to export any controlled goods or technology for use in a nuclear production or utilization facility, and prohibition on the approval of any transfer of any nuclear material, facilities, or component subject to the Agreement, or any assistance in any activities relating to the use of nuclear energy under section 57b(2) of the Atomic Energy Act.

The first five restrictions (i.e., the nonnuclear ones) can be satisfied either by the president reporting to the Congress that China "has made progress on a program of political reform throughout the country, including Tibet" or "that it is in the national interest of the United States to terminate a suspension." In the case of the nuclear cooperation, however, the president must additionally certify to Congress that China has "provided clear and unequivocal assurances ...that it is not assisting and will not assist any nonnuclear weapon state, either directly or indirectly, in acquiring nuclear explosive devices or the materials and components for such devices" plus provide the certifications and report required by the 1985 Joint Resolution.

Effectively, U.S. nuclear cooperation and trade with China was stopped before it could begin. The Foreign Assistance Authorization Act, however, grandfathered existing authorizations to engage in technology transfer with China granted by the Department of Energy (so-called 810 authorizations, referring to 10 C.F.R. Part 810). The purpose of these authorizations is to expedite safety-related assistance and improve the operational safety of civilian nuclear power plants worldwide. Pursuant to these grandfathered authorizations, limited U.S. participation in China's nuclear electric program has occurred. Engineering services and equipment exports to the nonnuclear portion of a nuclear energy plant (e.g., the turbines and generators) are also allowed under U.S. regulations.

A presidential determination of national interest alone would not be sufficient to remove the nuclear trade restrictions. The lifting of these restrictions requires not only that the president make the certifications arising from the Foreign Relations Authorization Act, but also the certifications outlined in the Joint Resolution. Additionally, the president has to make either a finding of progress on political reform or a determination of U.S. national interest. The presidential certifications, with their required reports, must lie before Congress for 30 days of continuous session before the trade prohibition is removed.

The United States has achieved a commitment from the Chinese to a national

nuclear export control regime that would include specific nuclear-related materials. In addition, China has evidenced interest in joining the international regime for controlling specific nuclear-related material exports, the Zangger Committee, which drafts the "trigger list" of items subject to IAEA safeguards under the Nuclear Non-Proliferation Treaty.

There remains, of course, the question of items that could have application in nuclear technology as well as more conventional uses—the so-called dual use commodities. The United States and China are discussing these items and the need for a Chinese regime similar to that reflected in the agreements of the Nuclear Suppliers Group. Although slower in coming to a conclusion, these discussions show clear evidence of moving forward.

Other Proliferation Concerns

The United States strongly opposes the proliferation of missiles, chemical, and biological weapons. In these areas, China's proliferation record also is mixed. M-11 missile equipment sales to Pakistan, C-802 antiship cruise missile sales to Iran, and recently, chemical precursors, chemical production equipment, and production technology sales to Iran have been sources of major concern.²⁰ Twice the United States has imposed sanctions against China for assisting in the missile program of Pakistan, and this May the United States imposed sanctions on Chinese companies accused of selling chemical weapons materials to Iran. The United States has also expressed serious concern regarding China's missile-related cooperation with Iran.

These sales serve to highlight significant differences in American and Chinese attitudes toward proliferation and the kinds of systems that constitute threats. Responding to U.S. concerns, the Chinese cite U.S. sales of high-technology weapons to Taiwan and elsewhere in the region and criticize Washington's inconsistencies in its arms control agenda.

The answer to nonnuclear concerns, however, is not for the United States to refrain from nuclear cooperation when that cooperation is the glue to continue to secure Chinese compliance with nuclear nonproliferation norms. The better course, again, is engagement. For example, military-to-military contacts between the two nations would provide the Pentagon with an opportunity to persuade their Chinese counterparts that upgrading Iran's military capability undermines Chinese regional security interests, given the threat that radical Islam poses to Xinjiang and China's far west. This threat has been brought home by bombings in Beijing that

20. On May 21, 1997, the United States imposed sanctions against two Chinese companies and five Chinese citizens because of these sales to Iran of chemical dual-use items. In testimony given the next day before the Foreign Operations Subcommittee of the Senate Appropriations Committee, Secretary of State Albright stated that these sanctions were "against specific individuals and companies and not against the government of China, and we have no evidence that the Chinese government was involved in these exports." Sanctions for missile violations were imposed in 1991 and waived on March 22, 1992 after assurances were given that China would comply with the Missile Technology Control Regime (MTCR) guidelines. New MTCR related sanctions were imposed on August 24, 1993 against China and Pakistan. This sanction was waived on November 1, 1994 for China, but not Pakistan.

may be linked to Islamic separatists. Moreover, to the degree that the United States and China do develop a more cooperative relationship, Beijing would be less likely to engage in trade that little serves its own fundamental interests but directly and substantially threatens long-established and clear American interests in the Middle East. If, however, engagement with China fails to restrain possible future proliferation activities, the United States continues to maintain the ability to impose sanctions.

Conclusion

Dealing with China on these issues has been long and complex. The strategic, economic, political, and cultural considerations that lie at the core of U.S.-China relations have not been easy to resolve and are still "works in progress." But the trend of development is positive.

It is important not to underestimate the proliferation problems that remain in China, but clearly, the best way to deal with these issues is engagement. Congress has expressed its concern through legislation, such as the Foreign Assistance Authorization Act and the 1985 Joint Resolution imposing certification of additional requirements before the agreement for cooperation can be implemented. As a result, China has become receptive to participating in an international export control regime and strengthening its nuclear export controls. China is demonstrating that it wants to incorporate U.S. nuclear reactor designs into its energy plan and is willing to take steps to address proliferation concerns to meet the additional requirements that Congress has imposed. If the United States government imposes additional requirements, we risk losing the progress that we have made and the opportunity to influence and strengthen China's nonproliferation policies and practices in the future.

In this regard, China is putting in place the infrastructure (policy, rules, and organizations) required to have an effective nonproliferation regime. Active U.S. nuclear energy engagement with China and Chinese experience in implementing new nuclear nonproliferation requirements will establish the culture, structure, and experience to produce the results we seek. Finally, once the Chinese have satisfied the nuclear nonproliferation requirements imposed by Congress, active engagement in civilian nuclear cooperation could only enhance the effectiveness of their nonproliferation program.

CHAPTER 4

Advancing Other U.S. Interests in China through Nuclear Energy Cooperation

Nuclear cooperation with China can advance U.S. interests in several significant ways. The first—and undeniably most crucial—is our national security interests, which were discussed in Chapter 3. This chapter addresses three additional interests that can be served through engagement.

Environment

Increasing amounts of carbon dioxide are being emitted globally from the burning of fossil fuels. Carbon-based fuels will account for 90 percent of the world's primary energy well into the twenty-first century. By the year 2010, global energy-related carbon dioxide emissions are expected to be 30 to 40 percent above 1990 levels with most of this increase occurring in the developing world.

Expanded reliance on coal brings obvious environmental consequences in terms of greenhouse gases and other atmospheric emissions. China is already the largest consumer of coal in the world; coal represents the primary source of electric generation in China. Carbon is a major greenhouse gas. In 1995, China accounted for 13 percent of the world carbon emissions²¹ totaling 807 million tons of carbon.²² The continued dynamic growth of the Chinese economy is expected to be accompanied by growth in Chinese demand for electricity, but today, most coal-fired plants in China are old, inefficient, and without modern cleaning equipment. As a consequence, as early as 2015, China is expected to be the largest emitter of greenhouse gases in the world.

The environmental impact of coal-fired boilers is severe. For example, even a 1000 megawatt coal-fired plant with the most modern pollution control equipment will emit each year 900 metric tons of sulfur dioxide, 4,500 metric tons of nitrogen oxides, 400 metric tons of heavy metals (cadmium, lead, arsenic, and mercury), and 6.5 million metric tons of carbon dioxide.²³ Currently, there is no technology available for retaining and neutralizing carbon dioxide emissions.²⁴

21. *Country Analysis Briefs - China*, Ibid.

22. "China's Claims on Earth's Resources Overtaking those of the United States," Press Release, World Watch Institute, August 28, 1996.

23. Blix, May 23, 1997, Ibid.

China's continued heavy reliance on coal burning for electric generation has consequences well beyond its borders. In a press release accompanying a World Watch Institute report entitled "China's Challenge to the United States and to the Earth," it was stated that China's use of oil and emissions of carbon dioxide, the leading greenhouse gas, was fast approaching that of the United States. The statement continued saying, "if China's rapidly rising use of coal continues, it will before long overtake the United States in carbon emissions, replacing it as the principal source of greenhouse gases that are destabilizing the earth's climate."²⁵

Worldwide nuclear electric generation has had a significant impact on limiting carbon dioxide emissions. For example, such emissions would have been 9 percent greater if electricity generated from nuclear electric facilities was instead obtained from the burning of fossil fuels.²⁶ For China to increase its reliance on nuclear energy is, therefore, of clear merit if containment of CO₂ is a global priority.

All energy conversion systems result in some environmental concerns. The challenge that China has is to address the issue of the ultimate disposal of spent nuclear fuel, one that many other countries address. Spent fuel disposal is technically solvable, and it should not present a political difficulty in China as in the United States. The Chinese have experience in the handling of nuclear waste from their military program, and the issue of the ultimate disposal of spent fuel is one that China must address in any case.

Safety

As the leaders of the Eight agreed at the Moscow nuclear summit of April 1996: when it comes to nuclear power, safety comes first. Although much of the technology being considered in China represents safe nuclear technology, the newest technology available from the United States is clearly safe and is based upon an infrastructure with the most operating experience in the world. The U.S. nuclear program is the largest worldwide with over 100 reactors and a generating capacity exceeding 100,000 megawatts. The U.S. industry—with the support of the U.S. Department of Energy—has developed a standardized, advanced light-water reactor that has been designed to be safer, more reliable, and more cost competitive than any other existing technology. The Nuclear Regulatory Commission has certified two of these designs and the third design should receive final design approval next year.

As China embarks on an ambitious nuclear program, the most effective way to enhance safety is to utilize "families" of standardized reactor designs. Standardization facilitates effective and efficient engineering, procurement, training, operations and maintenance, and quality assurance programs at and among the reactor sites. It also readily facilitates the establishment of an effective regulatory regime for regulating a rapidly growing nuclear program. If China were to standardize its program using the U.S.-developed advanced light-water reactor designs, nuclear safety worldwide would be enhanced.

24. Ibid.

25. "China's Claims on Earth's Resources Overtaking those of the United States," Ibid.

26. Hans Blix, *The Case for Nuclear Power*, Fifth Biennial General Meeting of the World Association of Nuclear Operators, Prague, Czech Republic, May 12, 1997.

Economic Considerations

The balance of U.S. trade with China shows a merchandise trade deficit in 1996 of \$39.5 billion. China's exports to the United States totaled \$51.5 billion, while U.S. exports to China were \$12 billion. In testifying before the Senate Finance Committee, U.S. Trade Representative Charlene Barshefsky stated that the size of the U.S. deficit is partially a result of "our export performance, which has been lagging."²⁷ Bilateral nuclear cooperation could substantially affect that balance.

China's future plans for building nuclear energy plants rise from less than 1 percent of electric generation today to 4 percent by the year 2010. By contrast, in the United States, nuclear power contributes to over 20 percent of the nation's electrical output. If, for example, China is to meet its goal to have 20,000 megawatts of nuclear generation by the year 2010, at least 11,200 megawatts of capacity must be ordered in the next few years. It plans to have 50,000 megawatts of nuclear generating capacity in operation by the year 2020. To meet this goal, China will need to order 2,400 megawatts of nuclear capacity per year. This is equivalent to ordering a new nuclear plant (with two reactor units) every year. Such a market could produce more than \$1.6 billion per year in U.S. exports to China, with more than 25,400 U.S. technical jobs supported by those exports. Longer-range forecasts look to 150,000 megawatts of nuclear electric generation on line by 2050. By contrast, the United States, which today produces more total electricity using nuclear energy than any other nation, has approximately 100,000 megawatts of nuclear capacity on line.

The export dollars created by these orders are substantial. For example, two new French plants being built at Ling Ao are worth \$2.7 billion to Framatome,²⁸ and the Canadian order is valued at \$3 billion. If the United States could successfully compete in the Chinese market, the potential export earnings could, therefore, be large.

The export of nuclear power plants and related services involves thousands of U.S. jobs and billions of dollars in export value. In addition to initial export opportunities, significant numbers of jobs and export dollars can be acquired to provide ongoing plant support services, fuel and other broader program services when U.S. nuclear technology is exported to another country.

If the United States is sidelined from the Chinese nuclear power market, the principal economic effects will be felt in two places: the United States, through loss of jobs and revenues, and abroad, as U.S. competitors gain the same jobs and revenues. China will simply continue to sign contracts with vendors from countries such as France, Canada, and Russia. Although Chinese nuclear authorities have expressed strong interest in the high quality of U.S. nuclear technology, they have made it equally plain that they will not hesitate to continue to buy from our strong competitors should Washington continue unilaterally to refuse to cooperate with Beijing.

27. Testimony of USTR Charlene Barshefsky before the Senate Finance Committee, June 10, 1997.

28. Comment by Jean-Claude Leny of Framatome quoted in the January 1995 issue of *Nuclear Week*, a trade publication.

CHAPTER 5

Findings and Recommendations

- ❑ U.S. interests in China are best advanced through engagement across a broad spectrum of issues, including regional stability, nonproliferation, free trade, democracy, human rights, and global issues ranging from terrorism to narcotrafficking to the environment.
- ❑ Peaceful nuclear cooperation could be a significant element of engagement, in light of China's growing use of nuclear electric energy and extensive U.S. capabilities in this area.
- ❑ Since 1985, China's nonproliferation policies and practices have generally improved, including through acceding to the Nuclear Non-Proliferation Treaty and supporting its extension, cooperating with the United States in halting North Korea's dangerous nuclear program under international monitoring, adopting a nuclear testing moratorium, signing the Comprehensive Test Ban Treaty, ratifying the Chemical Weapons Convention, observing the Missile Technology Control Regime guidelines, and refraining from assistance to unsafeguarded nuclear facilities.
- ❑ Building on this progress, the administration is discussing with China measures required to meet the congressional conditions for peaceful nuclear cooperation with China.
- ❑ If these nonproliferation conditions are met, peaceful nuclear cooperation would advance U.S. security, environmental, safety, and economic interests.
- ❑ From a security perspective, no nonproliferation policy can succeed without the active cooperation of the world's major suppliers, including China. China's proliferation practices at times continue to cause serious concerns, but the best way to address those concerns is through a cooperative relationship. Where such efforts fail, U.S. sanctions can still be imposed for trade related to nuclear, missile, chemical, or biological programs.
- ❑ Environmentally, cooperation with China's nuclear electric energy program could help Beijing reduce greenhouse gas emissions that would be generated if fossil plants were built instead of nuclear reactors. American participation would also assure Chinese access to the great strides in nuclear

safety U.S. companies have made in recent years.

- ☐ Participation in the Chinese market could bring billions of dollars of export revenues to the United States and tens of thousands of jobs to American workers.
- ☐ Since no other nuclear supplier is boycotting China, the only effect a continued U.S. embargo would have would be to drive China to foreign markets and thereby strip the United States of any leverage over the Chinese nuclear program.
- ☐ Thus, if the congressional nonproliferation conditions are met, it is strongly in the U.S. national interest to engage in peaceful nuclear cooperation with China, and the president should make the necessary certifications, reports, and determinations to allow that cooperation to proceed.

APPENDIX I

Potential U.S. Jobs Resulting from China Nuclear Reactor Sales

China's Plans for Nuclear Energy Plant Capacity

China has established for itself a very ambitious program for expanding its electricity generation from nuclear energy plants.

Table 4

Year	Nuclear Generating Capacity (Megawatts)
2010	20,000
2020	50,000
2050	150,000

Although these goals are subject to revision in the coming years, nonetheless the commitment is massive.

China currently has 2,100 megawatts of nuclear generating capacity in operation (two French-built units and one Chinese-built unit) and 6,700 megawatts of additional capacity on order (two French units, two Canadian units, two Russia units, and two Chinese units).

If the goal for 2020 of 50,000 megawatts of nuclear generating capacity is to be met, the Chinese will need to procure an additional 41,200 megawatts of nuclear generating capacity beyond what is already operating or on order. If the capacity is to be available and operating by the year 2020, however, all nuclear plant orders would have to be placed by 2014, allowing for six years from ordering a plant until it begins operating. In other words, if China is to meet its 2020 goal, orders must be placed for just over 2,400 megawatts per year on average from 1998 to 2014. Further, to meet the 2050 goal, the order rate would have to increase to 3,300 megawatts per year after 2014. For the following evaluation, however, the focus will remain on the nearer-term 2020 goal.

To put all this in perspective, a nuclear plant consisting of twin units (nuclear plants are always ordered in pairs, for economic reasons) would provide between 2,000 to 2,800 megawatts, depending of course on the size of the reactors chosen.

Thus, to meet its 2020 goal, China would effectively need to place an order for a new nuclear plant every year, for the next 17 years.

Plant Construction Costs in China

For the purpose of the following evaluation, it is assumed that the “overnight” construction cost for a nuclear plant in China will average \$1,400 per kilowatt. The term “overnight” refers to the fact that the costs exclude escalation and interest charges. Thus, the cost is in current day dollars, without inflation. Although interest charges are real expenses, they do not contribute to jobs and are therefore excluded from the calculations. The assumption of \$1,400 per kilowatt is relatively low compared to what would be expected for a new nuclear plant in the United States, because a significant portion of the construction work (excavating soil, constructing framework, pouring concrete, installing equipment, and the like) would be located in China. Labor costs in China are extremely low compared to the United States, for example. Extrapolating from cost per kilowatt to cost per megawatt works out to \$1.4 million per megawatt of generating capacity. On that basis, China will need to expend in excess of \$3.3 billion annually for nuclear plant orders, to meet its 2020 goal.

Potential U.S. Content in Chinese Nuclear Plant Projects

The nature of the contracting arrangements, the power level of the nuclear plants ordered, the actual companies that will be involved, and the amount of the construction work that will actually be performed in China are all variables that will have to be established for each nuclear project in China. These parameters may also vary from province to province within China. Therefore, the percentage of project costs that can potentially be sourced from the United States can only be estimated. Furthermore, based on China’s hunger for U.S. technology there is the potential that all future nuclear projects in China will be based on U.S. designs, after the U.S. restrictions are removed.

It is reasonable to assume that 50 percent of a nuclear project’s total costs can potentially be sourced from the United States. For some of the first projects, the U.S. content may be higher than this. However, the Chinese have a stated goal to “localize” more of the later projects as they develop their own capabilities. If a 50 percent U.S. content is assumed as an average, then China will need to import over \$1.65 billion per year of nuclear plant related goods and services from the United States to meet its 2020 goal.

U.S. Jobs Supported by Nuclear Exports to China

The U.S. Department of Commerce periodically provides data on the number of U.S. jobs supported by goods and services exports. The latest report (November 1996) states that the average output per job (for all goods and services exported

from the United States) was \$64,700. The Commerce report also notes that export-supported jobs produced salaries that were, on average, 13 percent higher than nonexporting jobs in the United States. The Commerce report includes both the direct and indirect jobs that result from exports. For example, the company that has a contract in China produces “direct” jobs. That company’s suppliers and subcontractors produce “indirect” jobs. The Commerce report does not include community jobs (e.g., those resulting from the purchases of homes, automobiles, groceries, and the like) that are supported by the direct and indirect jobs, as the infusion of cash works its way through the U.S. economy.

Inverting the \$64,700/job relationship indicates that every \$1 billion in exports supports more than 15,400 jobs. Thus, exporting more than \$1.65 billion per year to China in nuclear-related goods and services would support over 25,400 U.S. jobs. It should be recognized, however, that this would be 25,400 *full-time equivalents*. Actually, only a fraction of the individuals would be devoting 100 percent of their time to work on China export activities. The vast majority of individuals would be performing other tasks within their companies. Thus, in reality there would be hundreds of thousands of U.S. employees that would owe some part of their job to the support of nuclear trade with China. Because of friendships and because of the products and services that these employees would consume in their own communities, there would be millions of Americans aware of the economic benefits resulting from nuclear trade with China.

This evaluation considers only those jobs related to the design and construction of new nuclear plants in China. It does not attempt to estimate the export market that would also result from supplying the goods and services needed to support the operation and maintenance of all these new nuclear plants. Although difficult to quantify now, this will likely prove to be a very substantial market in itself.

APPENDIX II

China's Energy Sector

Table 5
Energy Consumption in China, 1995

Type of Fuel	Million Tons of Oil Equivalent	Percent of Total
Crude Oil	157.5	18.9
Natural Gas	15.8	1.9
Coal	640.3	76.9
Nuclear	3.3	0.4
Hydro	16.2	1.9
Total	833.1	100

Table 6
Coal, Crude Oil, and Natural Gas Extraction in China
1996 and 2000 Plan

Form of Energy	Unit of Measure	1996	2000 Plan
Coal	billion tons	1.38	1.45
Crude oil	million b/d	3.128	3.2
Natural gas	billion cu. meters	20.1	25

Table 7
China as an Oil Importer*

Year	Million b/d
1996	0.456
1997 est.	0.600
2000 est.	1.0
2005 est.	1.4-1.5
2010 est.	2.3-3.0
*China became a net importer starting in 1993. As late as 1985, China was a major net exporter, having sold abroad 36.3 percent of supply that year.	

Table 8
China's Electric Power Industry:
Installed Capacity and Electricity Generation
1980-1996

Year	Installed Capacity (megawatts)	Generation (Billion kwh)
1980	65,869.1	300.6
1981	69,132.6	309.3
1982	72,359.6	327.7
1983	76,444.9	351.4
1984	80,116.9	377.0
1985	87,053.2	410.7
1986	93,818.5	449.6
1987	102,897.0	497.3
1988	115,497.1	545.1
1989	126,638.6	584.7
1990	137,890.0	621.3
1991	151,473.1	677.5
1992	166,532.4	754.2
1993	182,910.7	836.4
1994	199,897.2	927.9
1995	217,224.2	1,006.9
1996	236,541.6	1,079.4

Table 9
China's Electric Power Industry
by Source, 1996

Source	Installed Capacity (megawatts)	Electricity Generation (billion kwh)
Thermal	178,864	878.1
Hydropower	55,578	186.92
Nuclear	2,100	12.83
Total	236,542	1,079.36

Table 10
China's Electricity Consumption Structure, 1996

Consumer	Percent of Total
Heavy industry	59.3
Light industry	14.8
Residential	10.7
Municipal and commercial	7.2
Agriculture	6.1
Transportation and telecommunications	1.9
Total	100

Table 11
Emissions from China's Thermal Power Plants, 1995

Type	Million tons per year
Coal-fired	360.05
Flyash and dust discharged	3.95
Sulfur dioxide emission	6.00
Ash and slag	
Discharged	99.36
Utilized	51.88
Percent utilized	52.20



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Memorandum

September 29, 1997

SUBJECT : Chronology of Chinese Weapon-related Transfers

Abbreviations Used

BWC	Biological Weapons Convention
CWC	Chemical Weapons Convention
MTCR	Missile Technology Control Regime
NPT	Nuclear Nonproliferation Treaty

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Date of Transfer or Report	Transfer	(Possible) Violation	Administration's Response
Nov. 1992	M-11 missiles or related equipment to Pakistan	MTCR Arms Export Control Act Export Administration Act	sanctions imposed on Aug. 24, 1993, for transfers of M-11 related equipment (not missiles); waived on Nov. 1, 1994
Mid-1994 to mid-1995	dozens or hundreds of missile guidance systems and computerized machine tools to Iran	MTCR Iran-Iraq Arms Nonproliferation Act Arms Export Control Act Export Administration Act	no sanctions
2 nd quarter of 1995	parts for the M-11 missile to Pakistan	MTCR Arms Export Control Act Export Administration Act	no sanctions
Dec. 1994 to mid-1995	5,000 ring magnets for an unsafeguarded nuclear enrichment program in Pakistan	NPT Export-Import Bank Act Nuclear Proliferation Prevention Act	considered sanctions under the Export-Import Bank Act; announced on May 10, 1996, that no sanctions would be imposed
July 1995	more than 30 M-11 missiles stored in crates at Sargodha Air Force Base in Pakistan	MTCR Arms Export Control Act Export Administration Act	no sanctions
Sept. 1995	calutron (electromagnetic isotope separation system) for uranium enrichment to Iran	NPT Nuclear Proliferation Prevention Act Export-Import Bank Act Arms Export Control Act	no sanctions

before Feb. 1996	dual-use chemical precursors and equipment to Iran's chemical weapon program	Arms Export Control Act Export Administration Act	sanctions imposed on May 21, 1997
summer 1996	400 tons of chemicals to Iran	Iran-Iraq Arms Nonproliferation Act ¹ Arms Export Control Act Export Administration Act	no sanctions
Aug. 1996	plant to manufacture M-11 missiles or missile components in Pakistan	MTCR Arms Export Control Act Export Administration Act	no sanctions
Aug. 1996	gyroscopes, accelerometers, and test equipment for missile guidance to Iran	MTCR Iran-Iraq Arms Nonproliferation Act Arms Export Control Act Export Administration Act	no sanctions
Sept. 1996	special industrial furnace and high-tech diagnostic equipment to unsafeguarded nuclear facilities in Pakistan	NPT Nuclear Proliferation Prevention Act Export-Import Bank Act Arms Export Control Act	no sanctions
July-Dec. 1996	Director of Central Intelligence (DCI) reported "tremendous variety" of technology and assistance for Pakistan's ballistic missile program	MTCR Arms Export Control Act Export Administration Act	no sanctions
July-Dec. 1996	DCI reported "tremendous variety" of assistance for Iran's ballistic missile program	MTCR Iran-Iraq Arms Nonproliferation Act Arms Export Control Act Export Administration Act	no sanctions

¹ Additional provisions on chemical, biological, or nuclear weapons were not enacted until February 10, 1996.

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July-Dec. 1996	DCI reported principal supplies of nuclear equipment, material, and technology for Pakistan's nuclear weapon program	NPT Nuclear Proliferation Prevention Act Export-Import Bank Act Arms Export Administration Act	no sanctions
July-Dec. 1996	DCI reported key supplies of technology for large nuclear projects in Iran	NPT Iran-Iraq Arms Nonproliferation Act Nuclear Proliferation Prevention Act Export-Import Bank Act Arms Export Administration Act	no sanctions
July-Dec. 1996	DCI reported "considerable" chemical weapon-related transfers of production equipment and technology to Iran	Iran-Iraq Arms Nonproliferation Act Arms Export Control Act Export Administration Act	no sanctions
1995-1997	C-802 anti-ship cruise missiles to Iran	Iran-Iraq Arms Nonproliferation Act	no sanctions
Jan. 1997	dual-use biological items to Iran	BWC Iran-Iraq Arms Nonproliferation Act Arms Export Control Act Export Administration Act	no sanctions
Jan. 1997	dual-use chemicals to Iran	Iran-Iraq Arms Nonproliferation Act Arms Export Control Act Export Administration Act	no sanctions
June 1997	air-launched C-801 cruise missiles test-fired by Iran	Iran-Iraq Arms Nonproliferation Act	no sanctions
ongoing	sale of an uranium conversion facility to Iran	NPT Iran-Iraq Arms Nonproliferation Act Nuclear Weapons Nonproliferation Act Export-Import Bank Act Arms Export Control Act	no sanctions

CRS Report for Congress

China's Compliance with International Arms Control Agreements

September 16, 1997

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China's Compliance with International Arms Control Agreements

Summary

Since 1992, China has joined parts of the international regimes intended to stem the proliferation of weapons of mass destruction (WMD) and missiles that could deliver them. The Chinese responded to significant pressures from the United States, Japan, and other countries, as well as to other considerations. China, in February 1992, unilaterally promised to abide by the Missile Technology Control Regime (MTCR) and acceded to the Nuclear Nonproliferation Treaty (NPT) on March 9, 1992. In September 1996, China signed the Comprehensive Test Ban Treaty (CTBT), but has not ratified it. The CTBT has not entered into force. China acceded to the Biological Weapon Convention (BWC) in 1984. Beijing is a signatory to the Chemical Weapons Convention (CWC), which entered into force on April 29, 1997.

Publicly available government and press reports have suggested that China has violated certain international agreements. The Director of Central Intelligence, in June 1997, submitted a required report to Congress stating that during July-December 1996, "China was the most significant supplier of WMD-related goods and technology to foreign countries." Also, U.S. policy has been premised on the belief that even if Chinese technology transfers to Iran and Pakistan are legal, they are harmful to U.S. and Chinese national interests in peace and stability.

China may be continuing to violate its commitment to abide by the MTCR (which is a set of guidelines, not a treaty). U.S. laws require sanctions if Chinese transfers contravene the MTCR, although China cannot violate U.S. laws. Since imposing sanctions on August 24, 1993, the Clinton Administration has not determined that China transferred missiles or missile-related technology that contravene the MTCR guidelines. Senior Administration officials have confirmed that there are concerns about Chinese missile-related transfers, while arguing that sanctions have not been warranted. A couple of reports have suggested serious divisions in the Administration about interpretation of intelligence and the appropriate response to Chinese transfers.

China's compliance with the NPT has become more of a salient policy issue in 1997, since the Clinton Administration has discussed with China the "early implementation" of the 1985 U.S.-China Nuclear Cooperation Agreement. The President is expected soon to issue certifications to implement the agreement. Various recent reports by the Administration state concerns — but no determinations — about China's possible noncompliance with the NPT.

There are reports and official statements that Beijing may not be in compliance with the BWC. Questions about China's chemical transfers and chemical weapon capability have become serious since the CWC entered into force. The Clinton Administration has confirmed that China provided supplies for Iran's chemical weapon program. The Administration imposed sanctions on May 21, 1997, on two Chinese companies, five Chinese citizens, and a Hong Kong company for transfers to Iran contributing to chemical weapon proliferation.

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China's Compliance with International Arms Control Agreements

China's Commitments

Since 1992, China has joined parts of the international nonproliferation regimes in response to significant pressures from the United States, Japan, and other countries, as well as to other considerations. The following discussion summarizes the status of China's commitments to international arms control or nonproliferation agreements or guidelines. The international arms control agreements to which China committed have more relevance to the nonproliferation of weapons of mass destruction (WMD) than to controls over China's weapon programs.¹

- **Missile Technology Control Regime (MTCR):** The MTCR is not a treaty; it is a set of guidelines that calls for restraint in exports of missiles capable of delivering a 500 kg (1,100 lb) warhead to 300 km (186 mi) as well as equipment and technology for such missiles. China, in February 1992, unilaterally promised to abide by the MTCR. In addition, in return for a waiver of U.S. sanctions, China committed, in a statement made on October 4, 1994, not to export surface-to-surface missiles "inherently capable" of delivering a 500 kg warhead to 300 km.
- **Nuclear Nonproliferation Treaty (NPT):** China acceded to the NPT on March 9, 1992. The NPT is a treaty covering transfers of nuclear weapons or nuclear materials and equipment. Article I of the NPT states that "each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices." Article III contains a stipulation that "each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the

¹ For more details, see: CRS Issue Brief 92056, *Chinese Proliferation of Weapons of Mass Destruction: Current Policy Issues*, updated regularly; and CRS Report 96-767F, *Chinese Proliferation of Weapons of Mass Destruction: Background and Analysis*, September 13, 1996, by Shirley A. Kan.

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safeguards required by this Article." In addition, China issued a statement on May 11, 1996, that it "will not provide assistance to unsafeguarded nuclear facilities." This statement was a result of discussions between Washington and Beijing over Chinese transfers of 5,000 ring magnets to an unsafeguarded nuclear facility in Pakistan.

- **Comprehensive Test Ban Treaty (CTBT):** In September 1996, China signed the treaty banning nuclear testing, but has not ratified it. During negotiations on the CTBT, China, on July 30, 1996, became the last of the five declared nuclear powers to begin a moratorium on nuclear testing. The CTBT has not entered into force.
- **Biological Weapons Convention (BWC):** China acceded to the BWC in 1984. The BWC bans the development, production, and stockpiling of biological agents or toxins which have no justification for peaceful purposes.
- **Chemical Weapons Convention (CWC):** China signed the CWC on January 13, 1993, and deposited its instrument of ratification on April 25, 1997. The CWC bans the development, production, stockpiling, and use of chemical weapons and requires the destruction of all chemical weapons and production facilities. The CWC entered into force on April 29, 1997.

China's Compliance

What is the status of China's compliance with nonproliferation or arms control agreements? China has maintained that it has not violated any international nonproliferation or arms control agreements. China cannot be said to violate the MTCR, since it is not an international treaty. However, China can violate its own commitments to the MTCR guidelines. The NPT does not ban peaceful nuclear cooperation. The CTBT has not entered into force.

Publicly available government and press reports have suggested that China has violated certain international agreements, including the NPT and BWC, and may be continuing to violate its commitment to abide by the MTCR guidelines. The Director of Central Intelligence (DCI), in June 1997, submitted a required report to Congress stating that during July-December 1996, "China was the most significant supplier of WMD-related goods and technology to foreign countries." U.S. policy has been premised on the belief that even if Chinese nuclear transfers to Iran and Pakistan are legal, they are harmful to U.S. and Chinese national interests in peace and stability.

In addition, U.S. laws require sanctions if Chinese transfers contravene the MTCR, although China cannot violate U.S. laws. The U.S. government, during the Bush and Clinton Administrations, determined twice that China made technology transfers that contravened the MTCR. Most recently, China was sanctioned for transfers to Iran that contributed to chemical weapon proliferation.

Compliance with the MTCR

In June 1991, the Bush Administration first imposed sanctions on China for transferring M-11 missile-related technology to Pakistan, since the M-11 short-range ballistic missile is covered by the MTCR guidelines. China promised in February 1992 to abide by the MTCR, and later, sanctions were waived. China later violated that commitment. President Clinton publicly acknowledged U.S. concerns that China may have transferred complete M-11 missiles to Pakistan. He reported to Congress on May 28, 1993, that "at present, the greatest concern involves reports that China in November 1992 transferred MTCR-class M-11 missiles or related equipment to Pakistan." Some believe that the Chinese missiles were transferred in retaliation for President Bush's sale of F-16 fighters to Taiwan.

On August 24, 1993, the United States again determined that China had shipped to Pakistan equipment related to the M-11 short-range ballistic missile and imposed sanctions in accordance with Section 73(a) of the Arms Export Control Act and Section 11B(b)(1) of the Export Administration Act. Since that action, the Clinton Administration has not determined that China transferred missiles or missile-related technology that contravene the MTCR guidelines. On October 4, 1994, Secretary of State Warren Christopher and Chinese Foreign Minister Qian Qichen signed a joint statement in which the United States agreed to waive the August 1993 missile sanctions and China agreed not to export "ground-to-ground missiles" which are "inherently capable" of delivering at least 500 kg to at least 300 km.

Nevertheless, media reports continue to allege that China has contravened its commitments to the MTCR. A June 1995 report said that the CIA found that China delivered "in the last three months" missile parts to Pakistan that could be used in M-11s (*International Herald Tribune*, June 23, 1995.) According to the same report, the CIA found that China delivered dozens or perhaps hundreds of missile guidance systems and computerized machine tools to Iran sometime between mid-1994 and mid-1995.

According to the *Washington Post* of July 3, 1995, the majority of the intelligence community reportedly believe that more than 30 M-11 missiles are stored in crates at Sargodha Air Force Base in Pakistan. The report cited intercepted communications, human intelligence reports, and satellite photographs of M-11 missile crates, but indicated that there are no photographs of M-11 missiles outside the crates to provide conclusive evidence. Also, the CIA and the National Intelligence Council have concluded that Pakistan has deployed Chinese M-11 missiles and Chinese technicians had assembled the M-11 missiles in Pakistan, reported the *Washington Times* (June 12, 1996) and *Washington Post* (June 13, 1996).

Also, the *Washington Post* reported on August 25, 1996 that the intelligence community agreed in a National Intelligence Estimate that China is providing blueprints and equipment to Pakistan to build a plant for making missiles that would violate MTCR guidelines. There is disagreement, however, about whether the plant will manufacture some major missile components or whole copies of the M-11 missile. Construction of the plant in the city of Rawalpindi allegedly began in 1995, and it will be operational in one or two years. On the next day, Vice President Al Gore confirmed U.S. concerns about the plant, saying "we're monitoring it very carefully,

and we have an active ongoing dialogue with the Chinese on this very point." In response, Pakistan's foreign minister denied the report, but said that "Pakistan reserves the right to develop anything for its defense with its own resources." The Chinese foreign ministry denied the report as "entirely groundless."

The November 21, 1996, *Washington Times* reported that a CIA report said China agreed in August 1996 to sell to Iran's Defense Industries Organization gyroscopes, accelerometers, and test equipment, which could be used to build and test components for missile guidance. On the same day, State Department spokesman Glyn Davies did not comment on the details of the report, but said that "we believe at this stage that, in fact, the Chinese are operating within the assurances they have given us." On November 23, 1996, Iran denied the article's allegations, and the Chinese foreign minister referred to the story as "misinformation."

Senior Administration officials have confirmed that there are concerns about Chinese missile-related transfers, while arguing that sanctions have not been warranted. The Secretary of Defense's April 1996 report, *Proliferation: Threat and Response*, stated that "China remains Pakistan's most important supplier of missile-related technologies." The report did not, however, say that China is in violation of its commitment to the MTCR.

In reply to Senator Bennett's question posed on January 8, 1997, Secretary of State Albright wrote that "while we have not reached a conclusion since the 1993 sanctions determination that any of these reported transfers meet the specific legal requirements for triggering sanctions under U.S. law, we are deeply troubled with respect to continuing reports of Chinese missile cooperation with Pakistan." She also wrote that the Administration is "deeply troubled by reports of Chinese missile cooperation with Iran."

On April 10, 1997, Robert Einhorn, Deputy Assistant Secretary of State for Nonproliferation, testified that since China's October 1994 statement, "we have had no reason to believe that China has violated its pledge" not to export MTCR-covered missiles, but "concerns about transfers of missile-related components, technology, and production technology persist, raising serious questions about the nature of China's commitment to abide by the MTCR guidelines."²

In June 1997, the DCI reported that in the last half of 1996, China was a major supplier of "a tremendous variety" of technology and assistance to Pakistan's ballistic missile program, which seeks to have an indigenous production capability. The DCI also stated that, during that period, China was a primary supplier of a "tremendous variety of assistance" to Iran's ballistic missile program.³

²Hearing before the Senate Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services on "Proliferation: Chinese Case Studies," April 10, 1997.

³Director of Central Intelligence. *The Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions: July - December 1996*. June 1997.

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A couple of reports have suggested serious divisions in the Administration about interpretation of intelligence and the appropriate policy response to Chinese transfers. The *Washington Times* on March 14, 1997 alleged that "numerous" intelligence reports have indicated that M-11 missiles are "operational" in Pakistan. These findings, however, have been disputed by some policy-makers, the paper said. *Time* magazine asserted on June 30, 1997, that the Clinton Administration has refused to discuss possible sanctions based on intelligence findings on the plant being built in Pakistan to manufacture missiles or missile parts. These assertions in the media as well as cited leaks from the intelligence community have indicated significant splits of opinion within the Administration about China's compliance with the MTCR guidelines and the appropriate policy response, including the application of new sanctions.

Compliance with the NPT

Since China's accession to the NPT in March 1992, significant concerns have persisted about China's compliance with the NPT, which, unlike the MTCR, is an international treaty. These concerns involve China's nuclear cooperation with Pakistan and Iran. China has maintained that it is cooperating in peaceful nuclear programs and has not violated the NPT. The U.S. government has argued that even if Chinese transfers are in compliance with the letter of the NPT, they contribute to Pakistan's and Iran's suspected nuclear weapons programs by transferring nuclear technology and knowhow, and by providing a civilian cover.

China's compliance with the NPT has become a more salient policy issue in 1997, since the Clinton Administration has discussed with China since early 1995 the "early implementation" of the 1985 U.S.-China Nuclear Cooperation Agreement signed under the Reagan Administration. The President is expected soon to issue certifications to implement the agreement. Congress, in a joint resolution (P.L. 99-183), had required Presidential certifications before the agreement can be implemented. The President must certify that U.S. nuclear exports will be used for peaceful purposes and that China is not in violation of paragraph (2) of section 129 of the Atomic Energy Act of 1954 (P.L. 83-703). That paragraph contains language similar to Article I of the NPT (about not assisting, encouraging, or inducing any non-nuclear weapon state to engage in activities involving source or special nuclear material and having direct significance for the manufacture or acquisition of nuclear explosive devices). In addition, Section 902 of P.L. 101-246, the Foreign Relations Authorization Act for FYs 1990-91, imposed sanctions on China for the 1989 crackdown, including a suspension of applications for nuclear cooperation. A waiver of this sanction must also be used to approve new nuclear exports to China.⁴ In part to meet U.S. concerns about China's inadequate export controls, China's State Council announced on September 15, 1997, the implementation of new regulations for nuclear export controls.

⁴Also see: CRS Report 97-440 ENR, *The 1985 U.S.-China Agreement for Nuclear Cooperation: Moving Towards Implementation?*, April 10, 1997, by Joshua Michael Boehm and Zachary S. Davis.

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On February 5, 1996, the *Washington Times* first disclosed intelligence reports that the China National Nuclear Corporation, a state-owned corporation, transferred to the A.Q. Khan Research Laboratory in Kahuta, Pakistan, 5,000 ring magnets, which can be used in gas centrifuges to enrich uranium. Pakistan's nuclear facilities in Kahuta are not under IAEA safeguards. According to the report, intelligence experts believed that the magnets provided to Pakistan are to be used in special suspension bearings at the top of rotating cylinders in the centrifuges. The *New York Times* of May 12, 1996, reported that the shipment was made after June 1994 and was worth \$70,000. The Chinese company involved was China Nuclear Energy Industry Corporation, a subsidiary of the China National Nuclear Corporation.

The State Department's report on nonproliferation efforts in South Asia (submitted on January 21, 1997) confirmed the sale, stating that "between late 1994 and mid-1995, a Chinese entity transferred a large number of ring magnets to Pakistan for use in its uranium enrichment program." A Presidential report confirmed that there was a question of noncompliance with the NPT. The report said that after receiving information in 1995 about the ring magnet sale, the Administration began discussions with China "to ensure that any nuclear cooperation with non-nuclear weapon states is consistent with China's obligations under the NPT."⁵ The report also stated that "Pakistan's import from December 1994 to mid-1995 from a Chinese entity of several thousand custom-built magnets for its unsafeguarded enrichment program indicates that Pakistan is undertaking at least to refurbish its uranium enrichment centrifuges, but such a refurbishment would not necessarily involve an increase in enrichment levels."

Some argued that China did not violate the NPT, because ring magnets do not comprise their own category of items within the Trigger List used by the IAEA. Others, however, argued that ring magnets are covered under the category of magnetic suspension bearings used in gas centrifuges. The Clinton Administration was not required to declare whether China had violated the NPT, but was obliged to determine whether U.S. sanctions required by Export-Import Bank Act were warranted. On May 10, 1996, the State Department announced that China and Pakistan would not be sanctioned, citing a new agreement with China. Administration officials said that China promised to provide future assistance only to safeguarded nuclear facilities, reaffirmed its commitment to nuclear nonproliferation, and agreed to consultations on export control and proliferation issues. The Administration also said that Chinese leaders insisted they were not aware of the magnet transfer and that there is no evidence that the Chinese government had "willfully aided or abetted" Pakistan's nuclear weapon program through the magnet transfer. In response, Congress passed a provision in the Defense Authorization Act for FY1997 (P.L. 104-201), which added new language for Section 2(b)(4) of the Export-Import Bank Act to also hold "persons" responsible for nuclear transfers.

The October 9, 1996, *Washington Times* reported that a September 14, 1996, CIA report said China sold a "special industrial furnace" and "high-tech diagnostic equipment" to unsafeguarded nuclear facilities in Pakistan. Chinese technicians in

⁵"Report to Congress Pursuant to Section 1306(c) of the Department of Defense Authorization Act," submitted to the House National Security Committee, April 1997.

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Pakistan reportedly prepared to install the dual-use equipment in September 1996. The deal was allegedly made by the China Nuclear Energy Industry Corporation, the same firm which sold the ring magnets. Those who suspect that the transfer was intended for Pakistan's nuclear weapons program say that high temperature furnaces are used to mold uranium or plutonium. The CIA report was said to state that "senior-level government approval probably was needed" and that Chinese officials planned to submit false documentation on the final destination of the equipment. The *Washington Post*, on October 10, 1996, reported that the equipment was apparently intended for a nuclear reactor being built by Pakistan at Khushab. There are no IAEA safeguards at that facility. The IAEA's list of nuclear-related dual-use equipment covers vacuum or controlled environment induction furnaces and vacuum and controlled atmosphere metallurgical melting and casting furnaces.

On October 9, 1996, the State Department said that it did not conclude that China has violated its statement that was issued on May 11, 1996 (see above). However, the State Department's statement did not address whether the reported transfers violated the NPT or contradicted U.S. laws (including the Arms Export Control Act and Export-Import Bank Act), which may require sanctions.

As for China's controversial nuclear deals with Iran, Chinese technicians reportedly built a calutron, or electromagnetic isotope separation system, for enriching uranium at the Karaj nuclear research facility, according to "confidential reports" submitted to President Rafsanjani by his senior aides (*Washington Times*, September 25, 1995.) If true, the Chinese transfer could be a violation of the NPT, since Iran's facility at Karaj is not under IAEA safeguards. The Secretary of Defense reported in the April 1996 report, *Proliferation: Threat and Response*, that "the Iranians have purchased an electromagnetic isotope separation unit from China," without saying where the unit is located.

In addition, the China Nuclear Energy Industry Corporation reportedly plans to sell Iran a facility to convert uranium ore into uranium hexafluoride gas, which could be enriched to weapons-grade material (*Washington Post*, April 17, 1995; June 20, 1996.) According to past intelligence reports cited in the media, the deal was proceeding with Chinese nuclear experts going to Iran to build the new uranium conversion plant near Esfahan (*Washington Times*, April 17, 1996.) As the Secretary of Defense stated in April 1996, "Iran's interest in uranium enrichment and spent fuel reprocessing, activities with no economic justification in Iran's civil nuclear energy plans, indicates Iran's desire for the capability to produce fissile materials for nuclear weapons."

Some Chinese civilian nuclear officials have reportedly indicated that China will not transfer the uranium conversion facility, ostensibly because of Iran's inability to pay. It is unclear whether the Administration is requesting cancellation of this deal as a condition for a presidential certification required by Congress for the implementation of the 1985 U.S.-China Nuclear Cooperation Agreement. China has not publicly stated whether it will cancel the sale of the uranium conversion facility, although Beijing and Washington are looking for agreements in preparation for a summit in October 1997.

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Various recent reports by the Administration state concerns -- but no determinations -- about China's possible noncompliance with the NPT. The State Department submitted a report to Congress for 1995 stating that "the United States continues to oppose Chinese nuclear cooperation with countries of proliferation concern such as Iran and Pakistan. Some of China's exports have raised questions about that country's compliance with NPT obligations."⁶ The DCI's June 1997 report for the second half of 1996 states that China was Pakistan's principal supplier of equipment, material, and technology for its nuclear weapon program, as well as a "key supplier" for some large nuclear projects in Iran. In August 1997, the Arms Control and Disarmament Agency (ACDA) reported that, for 1996, "questions remain about contacts between Chinese entities and elements associated with Pakistan's nuclear weapons program. However, the information is not sufficient to reach a judgment of non-compliance with the NPT."⁷

Compliance with the BWC and CWC

There continue to be concerns about China's compliance with the BWC. Questions about China's chemical transfers and chemical weapon capability have become serious since the CWC entered into force.

On February 24, 1993, the *Washington Post* reported that an intelligence finding said that "it is highly probable that China has not eliminated its BW program." In discussing compliance with the BWC in its Annual Report to Congress for 1996, ACDA reported in August 1997 that "there are strong indications that China probably maintains its offensive program." The report concluded that "in the years after its accession to the BWC, China was not in compliance with its BWC obligations and that it is highly probable that it remains noncompliant with these obligations."

The Secretary of Defense reported in April 1996 that "China has a mature chemical warfare capability and may well have maintained the biological warfare program it had prior to acceding to the Biological Weapons Convention in 1984. It has funded a chemical warfare program since the 1950s and has produced and weaponized a wide variety of agents. Its biological warfare program included manufacturing infectious micro-organisms and toxins" (*Proliferation: Threat and Response*).

Indeed, a high-level defense-related Chinese official wrote in the open journal of China's Academy of Military Science about the revolution in military affairs and mentioned the role of biological technology. He stated,

"Some predict that the 21st century will be 'the century of biological technology.' Certainly, 'gene weapons' and ultra-virulent large-scale lethal weapons should be absolutely forbidden, but other aspects of biological

⁶State Department, *Annual Report on the Proliferation of Missiles and Essential Components of Nuclear, Biological, and Chemical Weapons*, September 1996.

⁷ACDA, *Adherence to and Compliance with Arms Control Agreements* (for December 1, 1995 to December 31, 1996), August 1997.

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technology, such as what effect artificial intelligence will have, are really hard to predict, and attention should be paid to researching them."⁸

As for Chinese proliferation of biological weapons, in response to a question dated January 8, 1997, from Senator Bennett, Secretary of State Albright wrote that "we have received reporting regarding transfers of dual-use items from Chinese entities to Iranian government entities which raise concern." A January 24, 1997, *Washington Times* report cited a U.S. intelligence official as saying that the Chinese supplies involved dual-use equipment and vaccines.

As for Chinese transfers contributing to chemical weapon proliferation, several media reports alleged that such transfers took place. The *Washington Post* of March 8, 1996, reported that U.S. intelligence had been monitoring transfers of precursor chemicals and chemical-related equipment from China to Iranian organizations affiliated with the military or the Revolutionary Guards. The equipment was said to include glass-lined vessels for mixing the caustic precursors and special air filtration equipment to prevent poison gas leaks. Iran may also be buying the technology from China for indigenous and independent production. According to the *Washington Times* of November 21, 1996, a CIA report said that China, in the summer of 1996, delivered almost 400 metric tons of chemicals, including carbon sulfide, "used in" the production of nerve agents. *Jane's Defense Weekly* of January 8, 1997, cited intelligence sources that "there is now clear evidence" that Chinese dual-use chemicals are being shipped to front companies of the Iranian chemical weapons program.

The Clinton Administration has confirmed that China provided supplies for Iran's chemical weapon program. On April 10, 1997, Deputy Assistant Secretary of State for Nonproliferation, Robert Einhorn, testified that the Administration is "deeply concerned" by "substantial information" that "various Chinese entities have transferred chemical precursors, chemical production equipment, and production technology to Iran, which we expect will use them in its chemical weapons program." He cited "dual-use chemical-related transfers to Iran's CW program..."⁹ In June 1997, the DCI reported that China, during July-December 1996, provided "considerable CW-related assistance" to Iran that consisted of production equipment and technology.¹⁰

On May 21, 1997, the Clinton Administration imposed sanctions on two Chinese companies, five Chinese citizens, and a Hong Kong company for transfers to Iran contributing to chemical weapon proliferation. U.S. sanctions, affecting U.S. government procurement and imports, were imposed under the Arms Export Control

⁸Zhu Guangya (President of the Chinese Academy of Engineering, and Director of the Science and Technology Committee of the Commission of Science, Technology, and Industry for National Defense (COSTIND)), "Current Engineering Technology Development and the New Revolution in Military Affairs," *Zhongguo Junshi Kexue* (China Military Science), February 20, 1996; translated in FBIS-CHI-96-246.

⁹Hearing before the Senate Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services, "Proliferation: Chinese Case Studies," April 10, 1997.

¹⁰"The Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions."

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Act and Export Administration Act (as amended by the Chemical and Biological Weapons Control and Warfare Elimination Act). Sanctions were not imposed on the Chinese or Hong Kong governments. The State Department said that it has no evidence that those governments were involved in the transfers. Also, sanctions were not imposed under the Iran-Iraq Arms Nonproliferation Act, because the transfers in question apparently occurred before February 10, 1996, the date when provisions for sanctions on proliferation of WMD went into effect. The Administration imposed the sanctions two days after President Clinton announced on May 19, 1997, that he will extend most-favored-nation trade status to China for another year.

**STATEMENT BY THE
HONORABLE DOUG BEREUTER**

"Implementation of the U.S.-China Nuclear Cooperation Agreement"

October 7, 1997

Mr. Chairman, this Member would like to commend you for holding this very important and timely hearing on "Implementation of the U.S.-China Nuclear Cooperation Agreement." It is no secret, that this issue may take center stage in late October during the Clinton-Jiang Summit. With an agreement on China's accession to the World Trade Organization very unlikely given that country's reluctance to the market openings necessary to get into that organization, the issue of peaceful nuclear cooperation with China has moved to center stage.

Senior Clinton Administration officials have been negotiating with their Chinese counterparts to eventually implement a policy which would permit the sale of U.S. nuclear technology to China for peaceful use. In order for these sales to be allowed under U.S. law, the Administration must certify key non-proliferation targets to the U.S. Congress including a commitment from the PRC not to transfer nuclear weapon technology to non-nuclear weapons states and implementation of an effective export control system.

Let me say at this point that the Administration has a high burden to prove that all the requisite certifications under U.S. law are met, and this Member will carefully scrutinize any certification made by the President to the Congress. There is no disapproval process for the U.S. Congress absent changing U.S. law. Presidents Reagan and Bush examined this exact issue and decided that such certifications could not be met because of China's proliferation record and its inability or unwillingness to control dual use exports.

Nevertheless, all of us on this Committee and in the Congress should also be careful not to provide the Chinese government with an excuse to pull out of the negotiations by "moving the goalposts." While the Administration must not -- and I repeat not -- use the Summit to make a nuclear certification that they could not make months ago simply because they wish to have a "deliverable", the Congress should also not attempt to undermine these very important negotiations.

If we, Mr. Chairman, attempt to add new conditions for the resumption of peaceful nuclear cooperation with China and China decides to pull out of the negotiations for that reason, then we risk losing significant non-proliferation commitments from them. As with many issues between Congress and Executive Branch in foreign policy, the question of whether to resume sales of peaceful nuclear technology to China is a question of what the law requires and **whether the Administration has negotiated all it can out of China.**

Mr. Chairman, it is always easy for us to second-guess and say that the Administration could negotiate one more concession from China on any set of negotiations. It was true with the

intellectual property rights negotiations; it will be true with the WTO negotiations, and it could be true with these nuclear talks. However, we must remind ourselves of several key points.

- 1) It is in the United States interest to ensure that China has safe nuclear power generation.
- 2) It is in our interest to ensure the China not overly rely on dirty coal for their energy needs.
- 3) It is in our interest to ensure that China not look to Iran for its energy needs.
- 4) And finally, it is in our interest to help build reactors that will be built with or without us. **It is clear that since the United States has imposed an export embargo on nuclear technology to China, China has turned to the Canadian, the Russians, the French and others to begin building what will amount to an important part of the energy infrastructure for the 21st Century.**

In conclusion Mr. Chairman, this Member pledges a careful, even skeptical, review if the Administration certifies to Congress that it will end the export controls on U.S. nuclear technology to China. However, it is my intent to engage in a fair examination within the law and framework that the U.S. Congress established for this exact issue. As part of such responsibilities, I look forward to this very important hearing.

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